



FRIDAY, JANUARY 2, 1880.

**Beland Track Drill.**

The engraving represents a useful tool for drilling the holes in rails for fish-plates. It will be seen that it is attached by clamps, which are placed underneath the rails and hooked to the lower flanges. The pair of bars or guides on the right side carry a sliding feed-nut between them so that after the tool is attached at the joint of two rails, the drill can be moved so as to drill all of the four holes without disturbing the clamps. Among the advantages claimed for this tool is that the rails can be drilled without drawing the spikes, and that it need not be removed from the track to permit trains to pass; at the same time it can be attached and detached in a few seconds, and the drill adjusted for each of the holes in an instant.

These tools are manufactured by the Beland Track Drill Company, No. 718 North Second street, St. Louis, Mo.

**Contributions.****A Warning.**

TO THE EDITOR OF THE RAILROAD GAZETTE:

Is it always necessary to wait for an accident before preventive measures are taken? A case in point often presents itself to persons who ride on the Metropolitan Railway. Often there is no brakeman on the rear platform, and in case of any sudden stoppage the brakeman pushes through the crowded car to signal the next train. With a head-room of less than one minute this delay may easily become fatal. In case of an accident, the exemplary damages that may be expected from a jury will doubtless cause more care in the future, but they will not save the sufferings of the injured. N.

**Safety at Draw-Bridges.**

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Nov. 7, 1879, you quote Mr. Charles Francis Adams as pronouncing against the utility or necessity of stopping trains at railroad grade crossings and at draw-bridges. Upon this subject you do not give your own views, but opinions very contrary to Mr. Adams' are expressed in the "Catechism of the Locomotive," by Mr. Forney.

Upon this line there is a railroad crossing, and there are two draw-bridges. We adhere to the "full-stop" rule, in each instance. If this be useless, we should abandon it. At the draw-bridges, the arrangement of a danger signal (besides that given by hand), which must be displayed before the bridge-tender can possibly operate the draw, was adopted. But even then we were afraid to rely entirely upon the watchfulness of the engineer, and therefore established the rules which you will find inclosed.

Will you be kind enough to consider this question and to give your conclusions in your valuable columns.

E. T. D. MYERS.

[The following are the rules referred to in the letter above. Some comments on these and the subject generally will be found on the editorial page.—EDITOR RAILROAD GAZETTE.]

**Regulations with regard to Gate at Hanover Junction.**

In order to prevent collisions between trains of the two railroads crossing each other at Hanover Junction, observe the following:

Always come to a full stop before crossing the Chesapeake & Ohio line. The gate will, as a rule, stand closed and locked across both tracks. In the day time it will be opened by the depot hand at the junction, or if he be not in place in the day, and in all instances at night, it will be opened by the fireman of the engineer wishing to pass.

The order of precedence in passing this point shall be as follows: The Richmond, Fredericksburg & Potomac Railroad trains are to take precedence of those of like class on the Chesapeake & Ohio Railroad; but passenger trains on either road are to have precedence of freight or material trains on the other.

Should the gate be run into when closed across the road, the fact will be reported by the station agent.

**To Engineers.**

Approach draw-bridges cautiously (always make a full stop), ring the engine bell, and do not attempt to cross until the "All Right" signal is given. By day the "All Right" signal is given by lowering and raising three times vertically a white flag, by night the same motion with a white light. Red shown on the signal box upon the gallow frame, as well as all unusual signals of whatever nature, or the absence of lights or flags, mean DANGER! In thick weather, when the signals are obscured, the "All Right" signal must be given and received by word of mouth, and the draw tender must pass over the draw upon the engine; nor shall the train cross without him.

**To Draw Tenders.**

The draws must be opened for vessels when required, except for 30 minutes before train time during day-light, and one hour before train time at night, and not until the expected train has passed, unless it be more than one hour behind time.

Before moving the lever to lift the draw, by day plant a RED flag securely in the track, and do not remove it until the bridge is all right again for trains. At night hoist the RED light, and lower the WHITE light into the box. When the draw is again in position for trains, lower the red light into the box, and hoist the white light. See that the signal box shows red when draw is open, and white when shut.

The "All Right" signals to the trains will be given as follows:

BY DAY, stand in the centre of the track, and as soon as the train has stopped and the locomotive bell is rung, raise and lower by hand three times distinctly the WHITE flag.

BY NIGHT, lower and raise (after the bell rings), by means of the pulley, the WHITE light three times, about five feet.

Do not consider the draw all right until, by a personal examination of the track at each end, you are SURE of it.

When the weather is so thick that the signals are obscured, as in fogs and heavy storms, the draw-tender must give a spoken signal to the engineer, and must pass over the draw upon the engine.

**Report on Taxation of Railroads and Railroad Securities.**

The committee appointed at the last (Columbus) convention of railroad commissioners to examine into and report the methods of taxation as respects railroads and railroad securities, now in use in the various states of the Union, as well as in foreign countries, and, further, to report a plan for an equitable and uniform system for such taxation, present the following

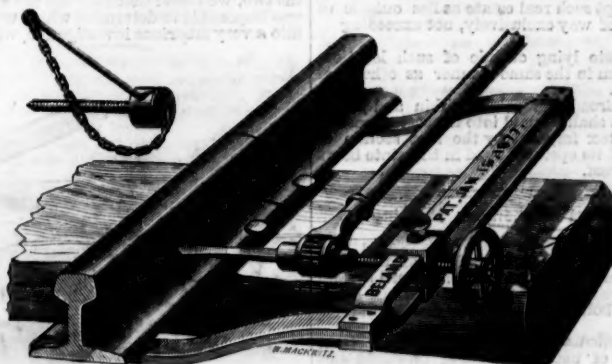
**REPORT.**

Shortly after the last convention of commissioners, your committee issued a circular and accompanying interrogatories in relation to the matter referred to them for investigation, which were sent to all the state executive, and to a large number of the leading railroad corporations of the country. Through the courtesy of the State Department at Washington, the representatives of the national government at the principal capitals in Europe were also called upon for information on the railway tax systems there in use. As a result, some sixty answers were, in all, received, covering the various states of the Union, Canada, England, France, Belgium, Holland, Germany, Russia, Switzerland and Austria-Hungary. The information contained in these answers is much of it of great value, especially in the case of the documents relating to the systems of taxation in use in foreign countries. These the committee have printed in full as part of the present report, as the facts and statements contained in them are not elsewhere to be found in any easily accessible shape. A compendium of the systems in use in all the states of the Union has been prepared, and likewise forms a part of this report.

On examining this compendium of state systems in present use in this country, it will at once be observed that they are much more varied than would naturally be supposed, or, perhaps, than would have been thought possible. Generally, it may be said, there is no one principle running through the various systems described; and further, that there is no

joining it was assessed. There would be no distinction made in regard to it. It is the ordinary tax on real property. Beyond that a certain fixed percentage, established by law and of general application, should be assessed on the entire gross earnings of the corporations, and this should be in lieu of all forms of taxation on what is known as personal property. Under this system the rolling stock of the corporation would not be assessable; nor its securities, whether stock or bonds, either indirectly through the corporation or directly in the hands of those owning them. The entire burden, be the same more or less, would be imposed in one lump on the corporation and levied directly. It does not need to be pointed out that this system is perfectly simple; that under it taxation is fixed by a general law and not by local valuations; that it is thoroughly proportionate, inasmuch as the amount levied depends on the volume of gross receipts; finally, it can be ascertained by any one, and can by no possibility be evaded.

The apportionment of a levy on gross receipts among the several states through which a single railroad may run is in this country undoubtedly attended with much difficulty, and the committee have given careful consideration to the subject. The conclusion at which they have arrived is that it should be made a matter of mutual understanding among the states, and that, as the levies must be independent, they should be apportioned according to mileage. That is, real estate owned by each corporation, outside of its right of way, should be locally assessed where it is situated, without regard to the fact that it belongs to a corporation and is used for railroad purposes. The vast and costly terminal grounds in New York, Chicago and all the other great trade-centres would thus be locally taxed at those centres and on the basis of valuation for similar adjoining land there in use. Real estate in the country, on the other hand, would be taxed at the country or agricultural valuation. The realty outside of the right of way being thus disposed of for purposes of taxation on fixed principles easily understood, the entire gross earnings of the corporations should be subject to assessment by each state through which its road might run in the proportion which the miles of the road in that state bear to its whole number of miles. The percentage of the levy would then be greater or smaller according to the law of the state, but the proportion of the whole amount upon which the levy was to be made would be fixed and always easy of ascertainment. The disposition to be made of the tax thus levied when paid into the hands of the state authorities—whether it should be

**BELAND TRACK DRILL.**

method of taxation possible to be devised which is not at this time applied to railroad property in some part of this country. So far as those now well recognized principles which should be at the basis of all systems of taxation are concerned, they would as a rule seem to have been utterly ignored. In two adjoining states, for instance, with roads belonging to one company operating in both, will be found on one side of the line a system, simple, direct, equitable, imposing a moderate and fixed burden from which there is no escape, while on the other side of the line will be met a system which can be said to be based on nothing more reliable than arbitrary guess-work. In certain states, the railroads are apparently looked upon as a species of wind-fall from which everything which can be exacted in the way of taxation is so much pure gain. In other states they escape with very slight and wholly disproportionate burdens. The franchise tax, the gross and net earnings tax, the personal property tax, the realty tax, are all met with indiscriminately; applied sometimes by local boards, sometimes by boards of state equalization, but almost invariably in utter disregard of any principle.

A more striking, and in some respects discouraging, example of general confusion, as regards an important matter of fiscal legislation could hardly be imagined.

The conclusion reached by the committee as the result of their investigations can be very briefly stated. The requisites of a correct system of railroad, as of other taxation, are that it should, in so far as it is possible, be simple, fixed, proportionate, easily ascertainable and susceptible of ready levy. Very few of the systems now in use in this country were found to possess any of these requisites. So far from being fixed, they are most of them extremely arbitrary and fluctuating. Neither are they proportionate, as in some cases the measure of valuation is the market price of securities; in others, the arbitrary estimates of appraisers; in yet others, gross receipts; and in others, local assessment. That the tax should be almost impossible of ascertainment under these circumstances does not need to be said. As to being susceptible of ready levy, any tax assessed on and paid by a railroad corporation is that; but it would appear that a large portion of the taxes now nominally levied must either be evaded, or else are in the nature of double taxation, for the securities on which they are assessed are in the eye of the law personal property, assessable at the residence of the owner.

If, therefore, these securities, whether bonds or stock, are taxed to the corporations in the state where its road is situated, they are as personal property subject to a further tax in the place of the holder's residence, if he happens to reside in another state; if such securities are not taxed to the corporations, then, whether they are taxed at all must depend upon the honesty of the holder wherever he lives, or the astuteness of the local tax-gatherer. The utmost inducement to fraud and evasions is thus systematically held out. For the conscientious holder of stock or bonds there may be no escape from double taxation of the most oppressive kind, while for the unscrupulous the door for evasion is wide open.

The conclusion at which your committee arrived was that all the requisites of a sound system were found in taxes on real property and on gross receipts, and in no others—in fact that when these were properly imposed, no other taxes were or could be necessary, as nothing would escape untaxed. Under this system, the real estate of the railroad corporations, held for corporate use outside of their right of way, would be locally assessed exactly in the same way as the real estate of private persons or of other corporations ad-

retained in the state treasury or distributed among localities, either those through which the road might run, or those in which the holders of its securities reside—would be matter for adjustment by legislation. It could either be retained in the state treasury or paid back into the local treasuries of the counties or towns in which the roads are located on mileage proportions, or rateably distributed among all the municipalities of the state. It is a tax on transportation, whether of persons or property. It is very possibly as equitable a method of raising money by taxation as can be devised. If it could, therefore, once be uniformly and properly adjusted, the distribution of the results of the tax would present very few difficulties. All communities and every part of each community are dependent more or less directly on railroad transportation. A general tax upon it, if properly imposed, would be felt not unequally by all, and might perhaps not unjustly be shared by all. Where the tax on railroads is now levied as an entirety by the state government, the most usual method of distribution is to divide it among the counties and municipalities through which each road runs in proportion to the length of it therein. In Massachusetts the tax is paid over to the place of residence of the individual stockholder, and any undistributed balance is paid into the treasury of the state. In Michigan the whole amount of the tax is paid to and retained by the state, being devoted to special purposes. In Mississippi, where there is a franchise tax, one half of it goes to the counties through which the road runs, the balance to the state. In New Hampshire, again, one-fourth of the tax is paid to the towns through which the road passes, in proportion to the amount expended in each town for right of way and taxes. The other three quarters is divided among the towns in proportion to the stock owned therein. In this respect, therefore, as in all others, the existing state systems afford every variety of precedent. The disposition to be made of a tax after it is collected in no way, however, affects the question of the proper method of collecting it. It must so largely depend on local exigencies that no general rule regulating it would seem to be possible.

Finally, the committee will say that, of all the systems of taxation examined by them, those in use in England, among the countries of Europe, and in Michigan and Wisconsin among the states of the Union, seem to them most intelligent and in conformity with correct principles. The Michigan and Wisconsin systems would seem to be especially commendable. The systems in use in many of the older states, on the contrary, and notably in the states of Massachusetts, New York, Pennsylvania and Ohio, are very cumbersome, and present hardly any features worthy of study or imitation.

That of Massachusetts, for instance, is based upon no recognized principle, would admit of evasions in a most obvious way, and is impossible of any general application. The fundamental idea with it is, that the capital stock represents the property, and that its market value will, therefore, approximately measure it for purposes of taxation. A heavily bonded road, under this system, practically escapes taxation; and, again, where the stock is owned outside of the state in which the road is situated, the tax levied on it inures not to the state of the owner's residence but to that in which the property is located. Under such a system it hardly needs to be said that the amount of debt behind the capital stock being disregarded, the burden bears little or no necessary relation to actual earning capacity, whether net or gross. Clumsy and devoid of scientific merit as it unques-



tionably is, however, the Massachusetts system would seem to be preferable to that still in use in New York, concerning which the state assessors in their annual report for 1878 expressed the opinion that under it there was "no uniform rule for any road, in any county, each assessor being governed entirely by his own views." In certain towns the railroads appear to pay about one-third of the entire taxes, while the assessed valuation now (1878) varies from \$400 per mile to \$100 per rod.

The difference in the assessment of the New York Central & Hudson River Road, where, for all the purposes that the road can be used, it is of the same value to the company as \$24,000 per mile. In short, it is scarcely an exaggeration to say that the assessments are as unlike as the complexion, temperament and dispositions of the assessors." It does not need to be pointed out that a system such as this—and it is the system in most general use—compels the corporations, in self-defense, to an active participation in local politics. Indeed, it is not too much to say, that, as a system, it is open to almost every conceivable objection.

It does not seem necessary to proceed in the enumeration of states, as the objections to which the system of each is open will readily suggest themselves to anyone at all familiar with the principles of correct taxation on reference to the accompanying abstract of these systems. It is very, very apparent that the subject of railroad taxation is one which in this country has as yet received very little mature consideration. With a view to affording some basis for better legislation, the committee submit with the accompanying documents the following form of law in which the phraseology of the Michigan statute has been very closely followed.

C. F. ADAMS, JR., of Massachusetts.  
W. B. WILLIAMS, of Michigan.  
J. H. OBERLY, of Illinois.

DEC. 1, 1879.

#### DRAFT OF LAW.

SEC. I. Every corporation, person or association owning or operating any railroad or any portion thereof in this state shall on or before the day of in each year pay to the State Treasurer an annual tax upon the gross receipts of said railroad, computed in the following manner, viz.: Upon all gross receipts not exceeding thousand dollars in amount per mile of road actually operated, per cent. of such gross earnings; upon such gross receipts in excess of thousand dollars per mile so operated, per cent. thereof; which shall be in lieu of all other taxes upon the property, capital stock or evidences of indebtedness of such corporations, except such real estate as lies outside of the location for a right of way exclusively, not exceeding rods in width.

SEC. II. The real estate lying outside of such location, shall be liable to taxation in the same manner as other real estate in the same place.

SEC. III. When a railroad lies partly within and partly without this state, there shall be paid into the state treasury such proportion of the tax imposed by the first section of this act, as the length of its operated road in this state bears to the whole length thereof.

#### Master Car-Builders' December Meeting.

The December meeting of Master Car-Builders was held at their rooms on Liberty street, New York, on the 18th, the subject for consideration being, "The standard system of screw-threads and the best method of maintaining exact sizes of screws so that bolts and nuts may be interchangeable."

About thirty gentlemen were present at the meeting, among them a number of manufacturers of taps and dies and bolts and nuts.

The meeting was called to order by Mr. Leander Garey, the Chairman, who requested Mr. Chanute to state the difficulties which he had encountered in introducing the Sellers system of screw-threads on the New York, Lake Erie & Western Railroad, with which he is connected. He said that he had already done so at the meeting held at Niagara, and therefore he would repeat his remarks as briefly as possible. He said that in 1874 the Sellers system was adopted on that road and a set of standard taps and dies had been furnished to each of the shops on that line, which, as they wore out, were replaced by others made from the originals at each of the shops. In 1878 attention was called to the fact that some nuts cut at one shop would not fit bolts cut at others, and an investigation was made. A set of nuts of the different sizes were cut at each of the shops, and were sent to Messrs. Pratt & Whitney, who fitted soft plugs, made of Babbitt metal, into each of these nuts. These were exhibited on the table. By taking at random a plug and a nut of nominally the same diameter, it was found that the one would rarely fit the other. It was seen that not only were the diameters different, but in many cases the pitch and angle of the threads had been altered from the original standard, and the taps made at different shops did not conform to each other. Nuts were taken from 23 or 24 foreign cars, and these not only were unlike their own screws, but were also unlike each other. This was the cause of great waste, detention and expense in making repairs.

It was found, moreover, that the practice had generally obtained of making taps over-size, so that all bolts above  $\frac{1}{8}$  in. in diameter were  $\frac{1}{8}$  in., and the smaller bolts  $\frac{1}{16}$  in. over-size. Investigation showed that the company was paying for about 85,000 lbs. of iron more than would have been required if it had been furnished of exact sizes. At present prices this would amount to \$1,000. Instructions were therefore issued that no more taps and dies should be made at the various shops, and since then these tools have all been bought from manufacturers of them at considerably less cost than they could be made for in the company's shops. It was supposed that in this way absolute uniformity could be obtained. In order to have the benefit of competition, however, taps were bought of different manufacturers. It was found, however, that some of the nuts cut with taps bought of one manufacturer could not be screwed on a tap made by another. This led to a request to the manufacturers to furnish sets of their standard screw gauges, which were compared with the standard gauges at the Brooklyn Navy Yard. To their surprise it was found that the gauges did not agree with each other, and although the difference was not very great, it was sufficient to prevent the bolts and nuts, made to conform to them, from interchanging with each other.

It is, perhaps, not very important which of the gauges is absolutely the correct one; but what the railroad men desire is that all taps and dies should be made to agree with some one standard, in order that they may be interchangeable, and it was probably to call attention to this difficulty, which now exists from the want of agreement between the standards of the various makers, that he was asked to make these remarks.

Mr. FORNEY said that one of the difficulties in the way of the introduction of the United States, Franklin Institute or Sellers standard system of screw-threads is, that no common standard of sizes is used by the various manufacturers of taps and dies. It was thought that by meeting them there, and stating this difficulty, it might lead to a remedy, and as Mr. Wm Sellers was the originator of the system, he was invited to come to New York to listen, and to talk to them

about the matter, and thus try to bring about agreement in that way.

Mr. GAREY said that there was no other business in the world in which the necessity for uniformity in the size of bolts and nuts was so great as in the car departments of railroads. It was no unusual thing for some of the trunk lines to have 600 loaded cars on their hands for what they term "running repairs," consisting very largely in the use of bolts, nuts, etc. If there was a standard that was used by all the owners of these cars, it would be a very easy matter to repair them, and send them forward to their destinations. On the trunk lines, by the interchange of what is termed the through freight traffic, they repaired cars owned by over 350 different companies. The variation in the threads of screws gives them no end of trouble, and therefore it was to be hoped that the makers of taps and dies would see the necessity of agreeing upon some common standard. Mr. Garey introduced Mr. SELLERS, who spoke as follows:

Mr. SELLERS.—I may premise, perhaps, by saying that what I have heard to-night has entirely changed my mind as to the purpose for which I was invited to be here. I supposed, when Mr. Forney asked me to be present at this meeting, that it was desired that I should endeavor to explain away what difficulties might exist in making the size of the flat on the top or bottom of the thread or in getting the angle right, or something of that kind; when he stated in his letter to me the difficulties the car-builders had encountered in making the work of their taps and dies interchangeable, it was a matter of great surprise to me, and I assumed, perhaps too hastily, that this difficulty had its origin in the system of screw threads to which he referred. It perhaps has been thirty years since I first used what we supposed were standard sizes in our works, as I was very early impressed with the importance of having some standard to which we might refer all our measures. There was no one making standard gauges at that time, except Mr. Whitworth, of Manchester, England, and we imported a full set. They were very nicely fitted up—so nicely, indeed, that they seemed to be unsuited for the workshop, and I devised a set of inside and outside callipers for workshop use, and used the standard gauges merely for the purpose of reference. In our innocence, we never suspected that there might be, practically, different measurements of the same thing, or that there was any difference in such standard measures; and we might, perhaps, have gone on much longer in that blissful state of ignorance, if it had not been that we ordered another set from Mr. Whitworth, and when we had the two, we found that they did not all agree perfectly. It was impossible to determine which was right, without going into a very laborious investigation, which we could not think

other; but, of course, they must have standards to work from that are alike in the beginning. These inducements were set forth in a paper which I read before the Franklin Institute some sixteen years ago, and I supposed that I would be called upon to explain how to avoid the difficulties that you encountered in making that particular thread. I am a little taken back, therefore, by finding that there is no difficulty in that direction at all.

The question seems to me to resolve itself into this: How shall we ascertain what is a correct inch or quarter-inch, or half-inch? It would not make any difference if you all adopted our standards of measurement, or if you adopted any of the standards and were all satisfied to work to that particular one.

When I proposed this system of screw threads, I supposed that everybody would make his own taps and dies, as therefore, and it was my hope that an interchangeable system would result because everybody would make his own in the easiest and simplest way. We continued to make our own taps and dies for a long while, but, in process of time, manufacturers of the standard taps and dies grew up in the country, and we found that it was cheaper for us to buy than it was to make them ourselves; we insisted, however, upon having them right by our standard. When they did not come right by our standard, we rejected them; but we have never experienced any difficulty in procuring taps and dies that would make interchangeable work, and this brings me to suggest that as the manufacturers of taps and dies have grown up in the country, when the demand for their work was sufficient, so at this time the making of gauges is established—only very recently perhaps—within a year or two. It is a very difficult thing to make a gauge that will be right; in fact, it is impossible to make one that will be so nearly right that no error can be detected in it. But there are practical limits within which we must work commercially, and within which we can attain interchangeable work, and if gauges can be made with this degree of accuracy, they would answer our purpose, so that practically their differences would amount to nothing. Now, I would suggest that the parties interested in this matter should make it the interest of the gauge manufacturer to produce a set of standard measures which all could accept as such, and I suggest this because it seems to me that the trouble does not lie with the system of screw threads. No difficulty seems to exist there. The difficulty is the original one of what is an inch, and until that has been settled, I do not think it is worth while to discuss the forms of threads; whether they shall have flat tops and flat bottoms or round tops and round bottoms, the difficulty would exist, and they would not be interchangeable

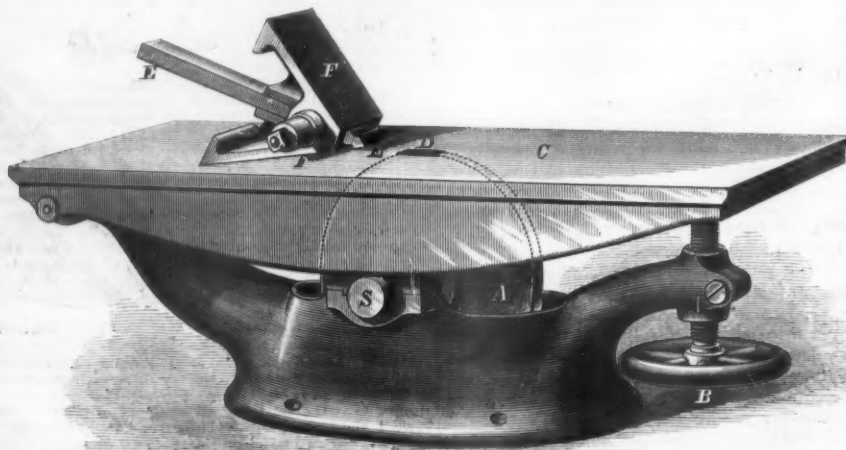


Fig. 1.

of, and we put the old set aside. I remember that we did not purchase the last set until after Mr. Whitworth had written his paper upon contact measurement, and devised his machine for making such measurements, and we therefore used the last set, thinking that it would be more exact. We had never found any difficulty in having the work of our taps and dies to interchange, and when Mr. Forney wrote to me about your troubles in that respect, it never occurred to me that these troubles might be owing to your original standard. I took it as a matter of course that your troubles arose from the inability to get the angles of your threads right, or the flat right, and I brought over such instruments as we had used for that purpose, that I might explain our process. The remarks that I have heard this evening, however, lead me to believe that the difficulty does not exist in the system of screw threads so much as it does in the matter of the original standard. It may be, however, that what we have done in getting our measurements of the flat, top and bottom, may interest you, and I will, therefore, describe it:

To insure an exact angle of 60° at the cutting point of the lathe tool, we plane up such tools to an exact size, and clamp them in a V block, as is shown in fig. 1. This V block is then placed on one of our surface grinding machines. The projecting end of the tool is presented to an emery wheel, which revolves below the plate, and the edge of which, by adjustment of the plate, can be made to coincide with the surface of the plate, or be raised above the surface—care having been taken to make the sides of the V block true planes, standing at an angle of 60° one to the other. The tool ground on such a holder has its end representing the extension of these true surfaces. Proper clearance may be given to the tool in grinding it, by underlying the V block with a wedge plate, made of the clearance angle beyond. The tool, when ground, as above shown, may then be topped off the required amount by planing the V block and tool still on plane in a vertical female V block, so arranged as to let the front of the tool be placed exactly vertical over the plane surface of the grinding machine; and the amount taken off for the flat required can be determined by the vernier gauge exhibited.

This (he continued) was sufficiently accurate to make two sets of gauges, not hardened, and that interchanged with each other, in every case, at the first trial, and without dressing the threads in any way. They, of course, were made to correspond in size to the one set of standard gauges, to which all of our work was made, and we did not encounter the difficulty which has been experienced from the different manufacturers using different gauges, which, doubtless, do not correspond. There appeared to be no trouble about it, and I suppose that no one would find any difficulty in making that kind of thread. In fact, the difficulty appeared to me to be so much less than in making the English thread, that I was induced to recommend it strongly to manufacturers, because, by taking ordinary care, they could make taps and dies that would be interchangeable with each

other, unless we could agree what should be the standard and what variation from that standard should be permissible.

Mr. FORNEY called attention to the practice of making taps and dies over-size, that is, an inch tap for example is made  $\frac{1}{16}$  in. in diameter. He inquired of Mr. Grant, of the Pratt & Whitney company, to what extent they had a demand for over-size taps and dies.

Mr. GRANT replied that the demand for that kind was greater than for those of even or standard dimensions. Usually they endeavored to induce people to abandon the use of over-size screws, and usually they were successful if there was time to confer with those who ordered. They found less difficulty in introducing the standard system than they at first expected.

Mr. SELLERS.—Early in our endeavor to establish a system of standard threads that would interchange, we were frequently asked to make taps of a larger size than the standard, the complaint being that we cut away so much of the iron as to destroy the value of the bolt. Now, that was perfectly true. If you take a half-inch and a thirty-second for a half-inch, or three-quarters and a thirty-second for a three-quarter inch bolt, and then cut it to the standard size, you will certainly cut away a thirty-second of an inch unnecessarily for the purpose of making a screw thread. The difficulty exists because almost all iron is rolled to full size. We had the same difficulty in establishing standards for shafting, many years ago. We found that  $\frac{1}{16}$  of an inch was sufficient to turn to our standards; that is to say, if the iron was two inches and no more, we could make good work. If it was less than two inches, we had difficulty. We required, therefore, that the mills making our orders should make the iron measure what it purported to be, and for a time we had difficulty in obtaining it. After a time, however, that difficulty disappeared, and I am perfectly satisfied there will be no difficulty in getting bolt-iron to standard sizes, if the public who use it insist upon it.

It is scarcely worth while to have a difference of  $\frac{1}{32}$  of an inch, in bolts that purport to be  $\frac{1}{2}$ -inch or  $\frac{3}{4}$ -inch; in fact, it would be a positive nuisance to have such various sizes, because to assort them we must measure them. The difference between a  $\frac{1}{2}$  and a  $\frac{3}{4}$ -inch bolt is evident at sight, and we ought to have our sizes vary enough to be detectable by the eye. The only excuse for such minute variations that can be offered is, that the iron, as it now comes from the mills, is almost always over size, but this, as I said before, can be remedied whenever we really mean to have it corrected.

Mr. FORNEY said it was desirable to get a very strong expression of opinion against the vicious practice of making taps and dies over-size. It prevailed very generally, even among some who thought they had adopted the Sellers standard system of screw threads.

Mr. H. S. MANNING, the sales agent for the Morse Twist Drill Company, stated that nut taps were very frequently



made  $\frac{1}{16}$  of an inch oversize, but other classes of taps are almost universally made undersize.

Mr. GAREY stated that in the construction of cars the universal practice was to use nothing but what are nominally even sizes of screws, but practically these are often as much as  $\frac{1}{16}$  in. oversize. One company had made their taps so large, to correspond with the oversize of iron, that finally they were obliged to order the iron a fraction of an inch larger than the nominal size.

Mr. GRANT said that many persons object to using the standard on account of the trouble of changing from the existing practice.

Mr. PACKARD, of the New York & New Haven Railroad, said that a few years ago he adopted the Sellers' standard system of threads and found no difficulty in making the change.

Mr. GAREY said that at the last annual meeting of the Car-Builders, a report was made on that subject, and the members were unanimous in stating their desire to work together to secure uniformity in screw-threads. The New York Central Railroad manufactures its own taps and dies, and he presumed that they cost more money than they would if it bought them. If it were established that a certain set of manufacturers were making interchangeable taps and dies, which would probably be used on all roads, they would find that most companies would be ready to buy such tools of them.

Mr. STETSON, Superintendent of the Morse Twist Drill Company, said that when they received an order for a  $1\frac{1}{2}$  in. Franklin Institute standard tap, they wrote to the parties asking them to omit that size, but they were not always successful. It was difficult for a manufacturer of taps to establish his own gauges independently of those to whom he supplies them. A thread made to fit one gauge would not fit another gauge which had been hardened, and a soft gauge would soon be destroyed. At the time the government established the use of the standard system of screw threads in the navy yards, ten sets of gauges were ordered from a manufacturer. His firm procured a duplicate set of these and took them to the navy yard in Boston and found that they were practically interchangeable. He also took them to the Brooklyn Navy Yard. The following tabular statement shows the difference between them:

SIZE.	Navy Yard Male Gauge	Morse Twist Drill & Machine Co., Male Gauge	Morse Twist Drill & Machine Co., Female Gauge
$\frac{1}{8}$ .....	0.25	0.25	Interchanged.
$\frac{3}{16}$ .....	.313	.313	"
$\frac{1}{4}$ .....	.375	.3750	Interchanged.
$\frac{5}{16}$ .....	.437	.437	"
$\frac{3}{8}$ .....	.505	.505	"
$\frac{7}{16}$ .....	.563	.564 (-)	"
$\frac{1}{2}$ .....	Damaged	.626	"
$\frac{9}{16}$ .....	.7505	.751	"
$\frac{5}{8}$ .....	.876	.8758	"
$1$ .....	1.00075	1.00075	"
$1\frac{1}{8}$ .....	1.125 (+)	1.125 (-)	Navy Yard M. T. D. & M. Co. (+) (-)
$1\frac{1}{4}$ .....	1.25	1.25	Interchanged.
$1\frac{3}{8}$ .....	1.375	1.375	"
$1\frac{1}{2}$ .....	1.5	1.5 (-)	(-).
$1\frac{3}{4}$ .....	1.6245	1.624	(-).
$2$ .....	1.749	1.749	Interchanged.
$2\frac{1}{4}$ .....	1.8745	1.874	(-).
$3$ .....	1.999	1.999	"

The sign (-) means that the piece is small, but not enough to measure. The sign (+) means that the piece is large, but not enough to measure.

The Pratt & Whitney Co. male gauges I did not calliper, with the exception of the  $1\frac{1}{4}$ , which I found to be 0.00025 in. small.

This they thought was a tolerably close agreement, and they had manufactured to that system since. But he was impressed with the idea that it was impossible for two manufacturers to establish gauges by measurement which would be interchangeable after hardening. As Mr. Sellers had suggested, that might be done if the gauges are left soft.

He thought that the best way for the users to keep run of their work was to provide themselves with a set of those male gauges, and if they used the Pratt & Whitney standard he had no doubt but they would furnish these gauges. He believed it to be best to let the nuts form the standards for the bolt. He believed that could be done without any great trouble, and the wearing of the taps could be detected, and when it was detected, it must be stopped. If the users tried to get the last possible cut out of a tap, they would destroy this interchangeable system very soon.

Mr. SELLERS.—There is just one word I should like to say, following up the suggestion of Mr. Stetson with reference to hardening standard gauges. It is quite possible to make interchangeable screw gauges, so long as you keep them soft, in which case they would answer perfectly for reference; but in our works we do not use such screw gauges at all. We depend upon measuring the outside diameter and the diameter at the bottom of the thread, the angle of the thread, the flat top and bottom and the pitch. We have purchased taps from nearly all the manufacturers; sometimes their work does not come right according to our method of measuring; but we depend entirely upon that. If the outside diameter is right, the size at the bottom of the thread is right, the angle of the thread, the pitch and the flat top and bottom are right, all of which can easily be determined by measurement, we accept them. We do not attempt to screw them into any gauge of that kind, and I believe that practically all the bolts and nuts that car-builders use would be interchangeable if the taps were measured in the way I have described. For this purpose, it would be only necessary to have sets of gauges that would be suitable for general work, standard callipers in fact. I do not think that you would help the matter much by having a gauge to screw your work into; because if it is hardened, the chances are that it won't be right—and if it is soft, it won't last half a dozen times before the size will be altered.

Mr. FORNEY.—Mr. Sellers remarks that to test taps would be simply to measure the outside diameter, the diameter at the root of the teeth, the angle of the thread and the pitch.

Mr. SELLERS.—If any one will take one of these taps and examine it he will see that the flat at the top and the bottom come so close together that almost anybody can detect a difference, if it exists, by the eye alone. The measurement of the outside is to the last degree simple, the bottom of the thread equally so, and if these are right the eye will detect an error if it exists in the flat top and bottom. With taps selected by such measurements I do not think there would be any difficulty in getting work that would be practically interchangeable.

Mr. FORNEY said it would then become simply a question whether their unit of measurement was correct.

Mr. GRANT said they had furnished the Pennsylvania Railroad Company, on which the Sellers system is used, with about two dozen taps, which, he was told by Mr. Stratton, would interchange with those made in the shops at Altoona.

Mr. STETSON said he would like to ask the opinion of Mr. Sellers whether some means should not be provided to stop the use of taps, and he would suggest that the boy who was tapping nuts be furnished with a standard gauge to test his work by.

Mr. SELLERS.—I think there is nothing better so long as it lasts. But consider the great number of times that it must be used. It could not be long before it would be used up. I think it quite good enough for such purposes to select a new tap, which has been measured and found correct, tap a dozen nuts with it, and give them to the boy who is cutting the bolts to be used as his gauge. If he has a good machine he will rarely require to test his bolts, so that a few such inexpensive gauges will serve for many hundreds of bolts, and when unfit for gauges they remain good nuts for practical use. Even hardened gauges will wear, but when worn they are useless.

Mr. STETSON was thoroughly impressed with the fact that those standards must come from some one source, and that all gauges must emanate from that point.

Mr. SELLERS asked if he meant to have these gauges hardened.

Mr. STETSON would do as Mr. Sellers should say about the matter. It was not important whether they were perfect or not, as long as they were interchangeable.

Mr. SELLERS asked if he could make them interchangeable if he hardened them.

Mr. STETSON said he would work at them until he did.

Mr. SELLERS.—I must say, Mr. Stetson, that I regard that as absolutely impracticable. If the thread has been distorted at all by hardening, it is impossible by any process not unreasonably expensive to bring it to the condition of a standard gauge, and if made standard before hardening, it would be absolutely impossible to restore it. You add so enormously to the cost of the production without any commensurate gain, that I should be loth to recommend the adoption of a system that would require such expensive machinery to determine whether you are right or not. I do not believe that for the practical purposes of car-builders they require anything like that. Their work will be interchangeable if they measure their taps in the way I have described—indeed, I believe they will obtain better work by selecting their taps by measurement than by gauging them into a hardened standard nut, as in the latter case the tap will probably be too small to commence with.

Mr. GRANT said that by processes which had been recently perfected they could make hardened-steel gauges of which both the angle of the thread and the pitch are perfect. They were expensive, but not so much so that they could not be used in all railroad shops.

Mr. FORNEY said it seemed that the practical difficulty at present was that the tap and die manufacturers were not agreed among themselves about the standard. If any authority could be exercised to say that some special set of gauges should be the established standard, then the manufacturers could work to it. It seemed as though the thing for them to do would be to come together and agree upon some standard. If they could not do that, they could submit the matter to the arbitration of some competent person to determine what should be the standard. Mr. Sellers had suggested that if the outside diameter of the tap, the diameter at the root of the teeth, the angle of the thread, the flat portion top and bottom and the pitch were right, the tap could not be wrong. These are all easily determinable by any car-builder.

Mr. GRANT said they had been to the expense of about \$30,000 for gauges, but the Pratt & Whitney Company would come together with the Morse Twist Drill Company or any one else, provided they could have the encouragement of the railroad companies to do it.

Mr. FORNEY said that he thought it was safe to assume that if the manufacturers agreed among themselves, the Car-Builders' Association and railroad managers would assent to such a decision at once.

After a vote of thanks to Mr. Sellers and the gentlemen connected with the manufacture of taps and dies who had taken part in the discussion, the meeting adjourned.

The following letter relating to the subject was received from Mr. Orton, of the Canada Southern Railway:

"CANADA SOUTHERN RAILWAY,  
"ST. THOMAS, Ontario, Dec. 16, 1879.  
"Leander Garey, Esq., President Master Car-Builders' Association.

"DEAR SIR: In reply to your kind invitation to be present at your meeting on the 18th inst., I regret exceedingly that I shall be unable to be with you, to lend a helping hand in pressing forward the good work begun at our last convention, of assimilating the numerous existing systems of screw-threads, and sizes of bolts and nuts, into one grand uniform system, by which every railroad company may be immensely benefited, both pecuniarily, as shown by the figures given in our last report, and in the relative safety of their cars, from keeping the several parts properly secured together, instead of being only partially so, as too many of them are at the present day.

"It is no exaggeration to say that one-half of the cost of ordinary running repairs needed may be traced to the bad fitting of nuts and bolts alone, from which cause trucks and draft-gearing are daily found more or less broken or disabled, and cars unsafe to run until refitted with new nuts or bolts.

"I beg leave to place on record my vote against the present want of uniformity in the screw threads in use, and wish greatly that I could be present to listen to the address to be given by Mr. Sellers, whose splendid system should be endorsed and adopted by every car-builder and manufacturer.

"I trust that the members will take up the subject in right good earnest, and compel manufacturers of bolts and nuts, and car-builders also, to acknowledge one system only, and that one to be Sellers', as adopted by the Franklin Institute.

"To show the desirability of this course, I would say that we are necessitated to keep three or four classes of nuts, varying to the extent of one-sixteenth of an inch in diameter of screw, which our repairers have to carry along with them, as they go from car, replacing lost or loosely fitted nuts. In the mean time, as a result of this and its consequences, cars are frequently side-tracked and delayed for hours. This at least is my experience, and I doubt not it is the experience of most of our members. Why should such a state of things continue to repeat itself, when there is a remedy for it in our own hands, if we would but grasp it?

"I am, dear sir, respectfully yours,  
"JOHN ORTON, Gen'l M. M., C. S. R."

#### Convention of the Southern Railway and Steamship Association.

The adjourned annual convention assembled in Atlanta, at 7 $\frac{1}{2}$  p. m., Dec. 16, Hon. Joseph E. Brown, President, in the chair, and a very full attendance of representatives of the companies belonging to the Association being present.

The chief business was to receive the report of the Committee on Revision of Agreement and Rules, appointed Nov. 5, and other committees. The report on Revision of Agreement and Rules was first submitted, together with a long letter from Mr. Albert Fink, giving opinions on some points concerning which the committee had asked his advice. He advised that questions in which only a part of the members of the Association are interested should be settled by those members only, and not by the whole Association; he advised against a proposition that if any member of the Association should be dissatisfied with the General Commissioner's interpretation of any of the rules of the Association, the operation of such rule should be suspended until it should have been passed upon by a committee or board of arbitration. This, he said, contained the germ of disorganization. It would be better to have the ruling hold good until reversed by such a committee or board. In that case the dissatisfied parties would be interested in hastening a meeting and decision; but if the ruling was suspended until confirmed, it would be their interest to delay a decision, and at best prompt action by such bodies is difficult. He suggested that to keep the Commissioner well informed as to the different interests and views of members of the Association it would be well to have not one but several standing committees on the various important subjects, as accounts, rules, classification, cotton rates, and merchandise rates; and make it the duty of the Commissioner to consult with the proper committee before taking final action on an important matter within its field; but if the committee was not unanimous the final decision should be made by the Commissioner, having heard all parties concerned. If his decision should not be satisfactory it might be reviewed by a general convention or a board of arbitration. Mr. Fink said that the duties of the Commissioner should be chiefly of an executive character; he should carry out the legislation of the Association, not act as dictator or manager, and act as judge only in case of disagreement. He especially recommended the appointment of a Board of Arbitration, and he suggested the railroad commissioners appointed by the Governor might be selected as arbitrators, and asked if legislation could not be had making their decision legally binding, saying "I have been of the conviction for a long time that the final solution of the railroad problem can only be accomplished in some such way, viz., by a commission or board of arbitration in which both the people and the railroad companies are impartially represented."

The report on Revision of Rules will be given substantially in the latter part of the proceedings, when its provisions were passed upon by the convention.

A memorial was presented from the Atlanta & Charlotte Air Line, the Richmond & Danville, the Baltimore Steam Packet Co., the Seaboard & Roanoke, the Raleigh & Gaston the Raleigh & Augusta Air Line, the Carolina Central, the Richmond, York River & Chesapeake, the Charlotte, Columbia & Augusta, the Philadelphia, Norfolk & Richmond Line, the New York & Wilmington Steamship Co., the North Carolina Line and the Old Dominion Steamship Co., presenting objections to the existing constitution, proposed amendments and existing apportionment of business of the Association, on these grounds: 1. The Air Line and its connections are allowed but 25 per cent. of the south-bound business, while the returns for six months show that they have carried 57 per cent. of it. 2. The method of arbitration provided when there is a difference between one line and a number of others makes the board of arbitrators entirely in the interest of the majority. 3. The change in the basis of representation proposed makes the members vote according to their apportioned revenue, which lessens the voting power of a member whose apportionment is unfairly small. The memorialists said this condition of things could not continue; if it was not remedied the lines would have to withdraw from the Association.

This memorial was referred to a committee of five appointed by the President (Messrs. Quintard, Alexander, Raoul, Knox and MacRae), which was instructed to confer with a committee of five appointed by the memorialists (Messrs. Sibley, Buford, Haskell, Robinson and Stanford).

Mr. E. B. Stahlman, Chairman of Committee upon Relations between Green Line and Eastern Lines, read the following report:

#### REPORT OF THE COMMITTEE ON RELATIONS OF THE GREEN LINE AND SOUTHERN RAILWAY AND STEAMSHIP ASSOCIATION.

"Your committee, to whom was referred all questions pertaining to the relations of the Green Line and this Association, beg leave to report as follows:

"The agreement of November, 1878, was intended to divide equitably business to coast and certain interior territory. For and in consideration of this, the eastern lines were to so adjust rates as to protect the Green Line on its interior business. It was also intended to enable the Green Line to derive an increased revenue, by maintaining higher rates to these interior points than it had previously been able to do, and to this end it was agreed that the Eastern Line rates to coast points should be made not less than the then existing Green Line rates to Augusta.

"On the assembling of the Rate Committee, it was ascertained that the Eastern lines were not able to comply with that part of the agreement, and it was found necessary to fix rates to coast points via the Eastern lines, on combination of locals, much below the current rates to Augusta. It was also found necessary to adjust rates to Augusta, and to interior Green Line points, on the same basis, thus virtually ignoring that portion of the November, 1878, agreement, which was intended to recompense the Green Line for the concessions that had been made to the Eastern lines.

"Within a very short period after the adjustment of rates by the Committee, it was found that the rates to coast points were not being maintained, the steamship lines claiming that they were unable to exact higher rates than their locals between the Eastern and Southern ports. It was found necessary to reduce rates to the coast, based on a combination of the steamship's local and reduced rates of the trunk lines, and in this way repeated reductions of the rates were made; in fact, it was admitted by the Eastern lines that they were unable to give the Green Line the protection promised, and it only remained for the Green Line to make such rates from time to time as the combination of the locals of the steamships and the trunk line rates would permit.

"It was discovered repeatedly during the year that the combination of locals via Richmond had a tendency to disturb the rates to the interior. Quite large shipments of Western produce had penetrated Green Line territory at cut rates, to Spartanburg, Greenville, Augusta, etc.

"Owing to these combinations of locals, it was found necessary to reduce the interior rates of the Green Line, so that during the past year the Green Line has not averaged as high rates per mile on its interior business as it did prior to the agreement on interior business, it was found that the practical working of the ten per cent. difference accorded the Eastern lines to coast and Eastern line interior points, had the effect of almost wholly excluding the Green Line from any participation in this business, except where it originated on and south of the Ohio River, and even such business, although conceded to the Green Line, was not fully protected, as many shipments from Ohio River points came to Southern coast and interior points via Eastern lines. The un-



standing on the part of the Green Line was that the 10 per cent. difference was intended to divide the business to Southern coast and Eastern interior points, and not that they should be wholly excluded from this territory.

"In view of all these facts, it appears unfair to ask that the terms of the agreement should continue in effect. Moreover, we may expect, within a very short period, an export movement of Western produce via Southern ports. To hope for this while all Western lines are virtually excluded from doing business at the coast would appear unreasonable.

"In order, however, to arrive at a temporary adjustment, a majority of your committee agree that the difference heretofore conceded to the Eastern rail and water lines by the Green Line to the coast and interior Eastern line territory on business from the West should be made five cents per hundred pounds, and that the same differences shall be conceded to the Green Line on interior Green Line business, it being distinctly understood that should any Eastern all-rail line bring any business into competitive Eastern territory, such line shall observe and use the all-rail Green Line rates, and on business into Green Line territory such line shall observe the same differences and work the same rates as Eastern rail and water lines, it being understood that business from Ohio River points to coast and Eastern interior points shall be conceded to the Green Line.

"While your committee is clearly of the opinion that the routes from the West via Eastern ports are unnatural and not entitled to participate in this traffic, your committee deem it best for the present, and would recommend the adoption of the above as a basis for a temporary adjustment.

"Herewith find resolution offered by the minority, which was rejected by the committee: those voting aye—Talcott and Fitzgerald; nays—Rogers, Dorsey, Knox, Stahlman. This is submitted at the request of the former as the

#### REPORT OF THE MINORITY, TO WIT:

"Resolved, That the all-rail lines working from the West via Danville, participate in all business from the West to Southeastern points at same rates as may exist via Green Line; and be it further

"Resolved, That this committee deem it inexpedient to make any change further from the agreement made by Eastern and Western lines at the last annual meeting of the Southern Railway and Steamship Association, for business in the territory reached by the respective lines.

"Respectfully submitted for the majority:

"E. B. STAHLMAN,  
"E. R. DORSEY,  
"WM. ROGERS,  
"GEO. R. KNOX.

"For the minority:

"T. M. R. TALCOTT,  
"EDWIN FITZGERALD,  
"REUBEN FOSTER."

The report of the Committee upon Revision of Agreement and Rules, and report of Committee upon Relations between the Green Line and Eastern Lines were ordered printed for action the following day.

At 3½ p. m., Dec. 17, the convention reassembled, and the report of the Committee of Conference and Committee from Memorialists was read by the Secretary, as follows:

"To the Members of the Southern Railway and Steamship Association:

"GENTLEMEN.—Your committee beg leave to report that they have conferred with the committee appointed by the memorialists, and organized the two committees as a joint committee, with Mr. Quintard as Chairman. The questions involved were fully discussed, and the committee adopted the following resolutions, which they recommend for the adoption of this Association, namely:

"Resolved, 1. That this Joint Committee recommend to the Association the appointment of Col. T. H. Carter, Col. Jno. Screven and Col. W. R. Arthur to be a permanent Board of Arbitration to serve for the ensuing Association year, and until their successors are appointed, to decide all questions referable to arbitration under the rules of the Association.

"Resolved, 2. That the decision of said Board on all pending questions shall cover a period from which the appeal from the action of the General Commissioner was taken.

"Resolved, 3. That in the event of either member now nominated on the Board of Arbitration failing to accept the position, or being unable to serve, his or their successors shall be appointed by this Joint Committee, to act until the next meeting of the Association, and that the convention be requested to continue this Joint Committee in authority for that purpose.

"Resolved, 4. That the Board of Arbitration select their own chairman, and for the present, the pay of the members of the Board be at the rate of \$2,000 per year each, and their necessary traveling expenses, the salaries and expenses to be paid monthly by the General Commissioner on the same basis as the salary of the General Commissioner is paid.

"Resolved, 5. That this Committee recommend to the convention the appointment of a Committee on credentials, who shall eliminate from the list of members all companies which are not interested in the competitive business of the Association, and that no member shall be entitled to vote upon any question in which it is not directly or indirectly interested, and that only the directors and general officers, including general freight agents of the companies, members of the Association, shall be present or participate in its proceedings, except by special invitation of a member of the Association.

"Resolved, 6. That the divisions of cotton shall be made on the basis of tonnage, and so far as practicable, each line shall carry its allotted proportion of tonnage; but lines carrying an excess shall settle balances in money as heretofore.

"Resolved, 7. That this Committee recommend that the Association take no action on the recommendation of the Committee of Seven as to a change in the basis of representation, and thus leave the basis of representation unchanged.

"GEO. W. QUINTARD, Chairman.  
"E. P. ALEXANDER,  
"W. G. RAUL,  
"GEO. R. KNOX,  
"WM. MACRAE.

"Committee appointed by Association.

"H. W. SIBLEY,  
"A. S. BUFORD,  
"A. C. HASKELL,  
"JNO. M. ROBINSON,  
"W. H. STANFORD.

"Committee appointed by Memorialists."

This report was taken up by sections, and each and all were adopted.

The presidents of the Georgia, the Central of Georgia, the Atlanta & Charlotte Air-Line, the Western & Atlantic, and the Charlotte, Columbia & Augusta railroad companies were by resolution selected to appoint a standing Committee on Rules for the ensuing Association year.

The report on the Relations between the Green Line and Eastern Lines being called up, a motion to adopt the minority report was defeated by a vote of 28 to 28, the President deciding. The majority report was then adopted by a vote of 28 to 25.

On the morning of the 18th the report on Revision of

Agreement and Rules was taken up, section by section, with the following result:

#### REVISION OF RULES.

1st. From Article 1 of the agreement, there be stricken out the words, "and passenger."—Adopted.

2d. That in Article 4, for the words, "the first Wednesday in October," there be substituted the words, "the second Wednesday in August."—Adopted.

3d. That to Article 5, after the words, "but said Convention shall have no authority to act upon any subject in which all the members of the Association are not directly or indirectly interested," there be added the words, "unless by unanimous consent of all the parties directly interested."—Adopted.

The 4th Section, in reference to votes of leased roads and others, passed over, because action had already been taken covering that matter. [No change.]

In lieu of the 5th Section, as reported by the Committee, Mr. Pope moved to adopt the following, which was carried:

5th. "And there shall be appointed the following Standing Committees, who shall hold office for like periods with the President of the Association. To wit: A committee of five persons, on Accounts, Finance, Organization and Rules.

"A committee of ten on Rates and Classification to which committee the General Commissioner shall be added, and of which he shall be Chairman.

"Both of said committees shall be appointed in such manner as the Association may provide."

6th. Section reading—That from Article 20 there be stricken out the words "both freight and passenger," was adopted.

7th. Section as reported passed over because of action already taken covering the same.

Sections 8th, 9th, 10th, 11th and 12th were adopted as follows:

8th. That in lieu of the present Article 24, there be substituted the following: "The General Commissioner is required to organize such system for the rendition of tonnage and revenue reports in the entire territory of this Association, both of divided and undivided traffic, and of the condition and observance of tariffs, as will give him absolute acquaintance with the progress and condition of the Association's affairs, and enable the application of remedies to evils that may arise, and will likewise enable a frequent transmission of current business so early after the performance thereof that lines may understand their status therein in time to have their conduct regulated accordingly; and to the accomplishment of these ends, and the other duties of his office, he is authorized to employ such force as is necessary, the expense of which, his traveling, incidental and all other necessary expenses, shall be assessed by himself and paid monthly by each member *pro rata*, according to the gross monthly income from competitive business of the company; and all expenses of the Association shall be subject to the supervision of the Committee on Finance, for whose information abstracts of expenditures are to be submitted."

9th. For the present Rule 11, there be substituted the following: "In determining the divisions at any one point, allotments shall be made to the several lines, and not to the initial roads alone, so as to include the sub-division of business."

10th. That from Rule 13 there be stricken out the words, "no through tickets or."

11th. That the following be adopted as Rule 23: "The duration of all allotments of business shall be to the end of the fiscal Association year, and thereafter, until a new allotment is made."

12th. And that in the rules there be incorporated, in their proper location, such as have been adopted at various conventions of the Association, and appear in the records thereof, viz:

Page 861—"The rate allowable as cost of carriage to roads carrying excess of business, shall be 20 per cent. of gross revenue derived."

Same page—"That on all through business that is divided, 20 per cent. of the tariff rates, or such smaller amount as the General Commissioner may find necessary, shall be reserved to the credit of the General Commissioner, and treated as an arbitrary amount prior to assessment of the proportions of the lines at interest, and the railway or steamship company making the collection shall deposit the same in some safe bank, to the credit of the General Commissioner, under such regulations as he may enact."

Page 113, new series—"That in all elections of officers, where more than one candidate is presented, said election shall be by ballot, and as each company is called, its representative shall come forward and deposit its vote."

"Referring to the recommendations of the General Commissioner, touching his control of competitive passenger traffic, the Committee beg to report that they consider it inexpedient to take such action, and have embodied their views on the subject in the amendments submitted to the convention.

"In the matter of Association agencies at the ports for expediting and perfecting its tonnage and revenue reports, the Committee consider that sufficient authority in the matter is given to the Commissioner in the proposed amendments to article 22.

"Touching a more explicit definition of the duties, relations and prerogatives of the General Commissioner and the Rate Committee to each other, and to the Association, the Committee consider that beyond the power of making rates and classifications for use by the members of this Association, the Rate Committee has no power to enforce its action, but such enforcement is a matter for the action of the General Commissioner under the rules of the Association."

It was voted that the office of the Association and the official residence of the General Commissioner be removed to Atlanta, Ga., on or before April 1, 1880.

The President announced the following standing committees under the revised rules: *Credentials and Elimination*.—Col. E. W. Cole, Hon. R. R. Bridgers, Gen. E. P. Alexander.

*Accounts, Finance, Organization and Rules*.—Col. A. S. Buford, Col. John B. Peck, Capt. W. G. Raoul, Mr. W. H. Stanford, Col. L. P. Grant.

A resolution was offered providing that each member of the Association should pay an assessment of \$250 per year, aside from contributions in proportion to competitive traffic, by which now all the expenses of the Association are paid. Notice was given that this would come up for action at the next meeting.

The Committee on Elimination and Credentials was instructed to prepare a voting list of the companies belonging to the Association, in accordance with the rules, under which list votes should be cast, and the committee's report on this matter was made the first business of the next meeting, which is to be held Jan. 28, 1880.

#### Receivers' and Lawyers' Fees.

On Monday, Andrew Sloan, Esq., standing master in the United States Circuit Court, had referred to him the following claims for compensation out of the fund of \$300,000 in the hands of John Screven and Samuel A. Strang, Esqs., late receivers of the late Atlantic & Gulf Railroad:

1. Petition of Judge W. S. Chisholm, for services as attorney of the second-mortgage bondholders, under whose foreclosure the road was sold and bought by H. B. Plant, Esq., the largest of the second-mortgage bondholders.

2. Petition of General A. R. Lawton, attorney of the receivers since their appointment in February, 1877.

3. Petition of Captain R. Falligant, attorney for the Atlantic & Gulf Railroad.

4. Petition of Messrs. John Screven and Samuel A. Strang, receivers, etc., for extra compensation.

Up to this time the Court has ordered paid, out of the earnings of the road, since the receivers were appointed: To Judge Chisholm, \$5,000; to General Lawton, \$5,000; to Captain Falligant, \$2,500; and to each of the receivers a yearly salary of \$7,500.

In addition to these sums already received, Mr. Sloan yesterday morning reported that these further sums be allowed:

To Judge Chisholm.....\$60,600  
To General Lawton.....12,000  
To Captain Falligant.....10,000  
To the receivers, \$4,000 each.....8,000  
To Samuel A. Strang, as trustee of the second-mortgage bondholders.....1,250  
To Eugene Kelly, as trustee of the second-mortgage bondholders.....1,250  
To Morris K. Jesup, surviving trustee of the first-mortgage bondholders.....2,500

Thus making a total of \$95,600 now to be paid to three lawyers, the two receivers and three trustees, one also a receiver, over and above the amounts already received by them, if objections are not filed in thirty days to Mr. Sloan's report, which was yesterday approved by the Court. If this is allowed, of course nothing will be left for the laborers and employees of the road, who have claims amounting to about \$120,000.

We are informed that the attorneys representing the laborers and employees, in whose favor Mr. Lester lately reported to the court, will certainly file exceptions within the prescribed time to the allowance of the full amount of these large sums, and that objections will be made to any allowance at all out of this fund to the attorney of the Atlantic & Gulf Railroad proper.

It is said that even if no question were made as to the amount of the fee that the attorneys for the bondholders ought to get, still that so large an amount as \$60,600 should not come out of the \$300,000 paid for the road, as half that amount, or \$30,000, would of itself pay 25 per cent. on the claims due to the laborers and employees. And that if the attorney of the bondholders should be paid anything out of the fund in court, it should only be a percentage for bringing the fund into court, which is rarely ever more than 10 per cent., even on small amounts. The amount now recommended by the master, with the amount already paid to the attorney of the bondholders, makes more than 20 per cent., or over one-fifth, of the whole sum realized by the sale of the road.

Of the sum allowed to the attorneys of the receivers, it is said that it is too large. And of the sum allowed to the attorney of the Atlantic & Gulf Railroad, that it is not only excessive, but altogether improper to be paid, as the receivers who have stood in the place of the railroad since their appointment, have had able counsel. As for the receivers, it is said they have been amply compensated by the salary of \$7,500 per annum already allowed them by the court.

As to the sums allowed S. A. Strang and Eugene Kelly, trustees of the second-mortgage bondholders, and to Morris K. Jesup, trustee of first-mortgage bondholders, it is contended that they have no shadow of claim upon the fund realized by a sale of the road under foreclosure of the second-mortgage.—*Savannah News*, Dec. 10.

#### THE SCRAP HEAP.

##### Railroad Equipment Notes.

The Fairlie engine "Janus," built by Wm. Mason some years ago and sold to the Lehigh Valley road is now in the shops undergoing repairs, and is to be put at work as helper on a grade. It has lain idle in the house at Mauch Chunk for nearly four years past.

Adam Johnson & Son, of the Franklin Iron Works at Reading, Pa., are building a number of iron ore cars for the East Penn Iron Co., and for Clymer & Co., of Reading.

The Rhode Island Locomotive Works at Providence recently delivered three locomotives to the Pittsburgh & Lake Erie road.

The Litchfield Car Co., at Litchfield, Ill., lately delivered 50 flat cars to the Houston, East & West Texas road.

The Danforth Locomotive Works in Paterson, N. J., recently delivered a mogul freight engine to the Tennessee Coal & Railroad Co.

The Nashville, Chattanooga & St. Louis shops in Nashville, Tenn., are changing several engines from 5-ft. to standard gauge, for use upon the Owensboro & Nashville road.

The Hinkley Locomotive Works in Boston lately completed a heavy mogul freight locomotive for the New London Northern road.

A bill to have the Winchell Car Ventilator Co. declared insolvent and a receiver appointed, has been filed in the United States Circuit Court in Chicago by Thomas H. Fletcher, a creditor.

The Boston & Albany shops at Springfield, Mass., have turned out a heavy freight engine with 18½ in. cylinders and four 4½-ft. driving wheels. The steam-ports are 8 by 1½ in. in size. The weight of the driving wheels when loaded is 54,000 lbs., or 13,500 lbs. per wheel.

The shops of the Morris & Essex Division of the Delaware Lackawanna & Western road, at Kingsland, N. J., have just completed a heavy passenger engine and are building another. These engines have long fire-boxes, to burn anthracite coal, and are specially designed for the heavy passenger trains of the road.

**Iron and Manufacturing Notes.**

Pequest Furnace, in Warren County, N. J., is being repaired, and will go into blast about the middle of January.

The Crescent Iron Co. has been organized at Pomeroy, O., to operate the rolling mill and furnace of the old Pomeroy Iron Co., sold some months ago.

Swedes Furnace, in Montgomery County, Pa., is being put in repair, and will be started up as soon as it is ready. Both stacks are to be used.

Williams, Long & McDowell, of the Keystone Rolling Mill, have started their new rotary shear, which is the largest now in use in this city. It will shear a plate 48 in. wide and ¾ in. thick. It works without a jar, and cuts the iron as if it were paste-board. They have also added a new engine to work it. They have started their plate-mill double turn, and will start their guide-mill soon. The latter has not been in operation for some years. They report orders plenty and are full of work.—*Pittsburgh American Manufacturer*.

The Millertown Iron Co. is preparing to put its furnace at Macungie, Pa., into blast. The company will probably build a track about two miles long from the furnace to Spring Creek, on the Catasauqua & Fogelsville road.

One of the large blast furnaces at Boonton, N. J., was started up last week, after a rest of several years.

Swift's Rolling Mill Co., in Cincinnati, is shipping light iron rails to the Texas & St. Louis road.

The New Albany (Ind.) Steam Forge has now five steam hammers and is running full double time on orders.



## RAILROAD EARNINGS IN NOVEMBER.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.	
	1879.	1878.	Inc.	Dec.	Per c.	1879.	1878.	Increase.	Decrease.	Per c.	1879.	1878.
Atchison, Topeka & Santa Fe.	995	809	126		14.5	\$654,500	\$438,588	\$215,912		49.2	\$658	\$505
Burlington, Cedar Rapids & North.	454	434	20		4.6	147,785	129,404	18,291		14.1	326	298
Cairo & St. Louis.	146	146				23,029	19,904	3,125		15.7	158	136
Central Pacific.	2,335	2,067	268		13.0	1,487,000	1,537,498		\$50,498	3.3	637	744
Chicago & Alton.	840	678	162		23.9	597,143	399,379	197,764		49.5	711	580
Chicago & Eastern Illinois.	159	159				88,477	75,167	13,310		17.7	556	473
Chicago, Milwaukee & St. Paul.	2,182	1,729	453		26.6	1,101,000	809,212	291,788		36.1	505	408
Chicago & Northwestern.	2,219	2,103	116		5.5	1,557,000	1,407,240	149,760		10.6	702	609
Chicago, St. Paul & Minn.	178	178				132,476	97,441	35,035		36.0	744	547
Cleveland, Mt. Vernon & Del.	137	137				33,598	34,537		939	2.7	214	230
Flint & Pere Marquette.	280	280				113,898	97,724	16,174		16.6	407	349
Hannibal & St. Joseph.	292	292				188,406	207,917		19,511	9.4	645	712
Houston & Texas Central.	512	501	11		2.2	429,803	408,133	21,670		5.3	852	815
Illinois Central, Illinois lines.	854	818	36		4.4	474,990	491,147		16,157	3.3	556	600
Iowa lines.	402	402				135,311	127,755	7,556		5.9	336	317
International & Great Northern.	520	516	10		1.9	241,803	234,001	7,802		3.3	460	451
Little Rock & Fort Smith.	155	155				63,500	41,088	22,412		54.0	384	240
Louisville & Nashville.	1,118	973	145		14.9	680,500	591,370	89,130		16.6	617	608
Minneapolis & St. Louis.	123	123				49,968	29,401	20,567		70.0	406	239
Missouri, Kansas & Texas.	786	786				387,085	289,881	97,204		33.5	492	369
Mobile & Ohio.	506	527		21	4.0	309,078	309,094		616	0.2	611	588
Northern Pacific.	644	644				202,465	103,741	98,724		95.2	314	161
Paducah & Elizabethtown.	185	185				41,767	27,737	14,030		50.6	226	150
Pennsylvania.	1,765	1,716	49		2.9	3,131,997	2,996,101	135,896		4.5	1,775	1,746
St. L., Alt. & T. H., Main Line.	185	185				100,571	70,375	24,196		31.7	510	392
St. L., Alt. & T. H., Bellevue L'e	71	71				32,610	51,187	1,423		2.8	741	721
St. Louis, Iron Mt. & Southern.	685	685				636,105	535,411	120,784		22.6	658	782
St. Louis & San Francisco.	477	328	149		45.4	199,861	118,515	81,346		68.6	419	361
St. Louis & Southeastern.	208	208				62,232	62,977		755	1.2	299	303
St. Paul & Sioux City.	392	329	63		19.2	122,583	111,619	10,964		9.8	313	339
Toledo, Peoria & Warsaw.	237	237				105,098	90,144	14,954		16.6	443	380
Union Pacific.	1,042	1,042				1,241,989	1,084,324	157,665		14.5	1,192	1,041
Wabash.	783	688	95		13.8	470,272	452,740			3.9	601	658
Total, 33 roads.	21,913	20,231	1,703	21	8.3	\$15,292,780	\$13,487,442	\$1,805,338	\$88,476	13.4	\$698	\$607
Total increase.			1,682					1,805,338				

## RAILROAD EARNINGS, ELEVEN MONTHS ENDING NOVEMBER 30.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1879.	1878.	Inc.	Dec.	P. c.	1879.	1878.	Increase.	Decrease.	P. c.	1879.	1878.	Inc.	Dec.	P. c.
Atch., Top. & S. F.	940	804	136		17.0	\$5,722,518	\$3,609,930	\$2,112,588		58.5	\$6,088	\$4,490	1598		35.6
Bur., Cedar Rapids & No.	438	434	4		0.9	1,358,745	1,402,991		\$44,246	3.2	3,102	3,233		\$131	4.0
Cairo & St. Louis.	146	146				242,472	212,644	29,828		14.0	1,661	1,456	205		14.0
Central Pacific.	2,242	2,067	175		8.5	15,840,127	16,174,533		334,406	2.1	7,065	7,825		790	9.7
Chicago & Alton.	777	678	99		14.6	5,198,704	4,331,572	868,132		20.0	6,091	6,387	304		4.8
Chi. & Eastern Illinois.	159	159				810,458	743,474	66,984		9.0	5,097	4,676	421		9.0
Chi., Mil. & St. Paul.	1,930	1,489	441		29.6	8,948,000	7,735,248	1,212,752		15.7	4,636	5,195		550	10.8
Chi. & N. W.	2,168	2,085	83		4.0	14,771,290	13,918,902	852,388		6.1	6,813	6,676	137		2.1
Chi., St. Paul & Minn.	178	178				1,047,255	845,468	201,787		23.9	5,885	4,747	1,138		23.9
Cle., Mt. V. & Del.	157	157				303,934	348,421	15,513		4.4	2,318	2,219	99		4.4
Grand Trunk.	1,350	1,390		40	2.9	8,253,985	8,152,701	101,284		1.2	6,114	5,895	219		3.7
Great Western.	526	526				4,083,477	4,133,570		50,093	1.2	7,763	7,858		95	1.2
Hannibal & St. Jo.	292	292				1,738,069	1,806,882		128,783	6.9	5,922	6,393		441	6.9
Houston & Texas Cent.	502	501	1		0.2	2,823,451	2,540,418	283,033		11.1	5,624	5,071	553		11.0
Ill. Cen., Ill. lines.	854	818	36		4.4	5,034,491	5,095,342		60,851	1.2	5,895	6,229		334	5.4
Ill. Cen., Iowa lines.	402	402				1,334,557	1,420,231		85,674	6.0	3,320	3,533		213	6.0
Inter. & Gt. Northern	519	516	3		0.6	1,554,583	1,403,396	151,217		10.8	2,965	2,720	275		10.1
Louisville & Nash.	1,026	970	56		5.8	5,308,464	4,849,257	459,207		9.5	5,174	4,999	175		3.5
Mem., Paducah & No.	115	115				140,012	192,557		22,545	13.9	1,217	1,414		197	13.9
Missouri, Kan. & Tex.	786	786				2,963,345	2,740,532	222,813		8.1	3,770	3,487	283		8.1
Mobile & Ohio.	512	527		15	2.8	1,810,633	1,619,367	191,266		11.8	3,590	3,073	463		15.1
Pad. & E'town.	185	185				290,915	294,809	5,025		1.7	1,621	1,594	27		1.7
Pennsylvania.	1,741	1,716	25		1.4	31,166,353	29,031,438	2,134,915		7.4	17,092	16,981	921		5.4
St. L., A. & T. H., B. Line	71	71				496,892	457,022	39,870		8.5	6,997	6,445	552		8.5
St. L., Iron Mt. & So.	685	685				4,636,562	4,046,126	590,436		14.6	6,799	5,907	862		14.6
St. Louis & San Fran.	387	328	59		18.0	1,440,890	1,105,792	335,098		30.4	3,723	3,371	352		10.4
St. Louis & Southern	208	208				606,002	602,238	3,764		0.6	3,204	2,895	309		10.6
St. Paul & Sioux City.	351	329	22		6.7	1,030,938	1,004,389	26,549		2.6	2,637	3,053		116	3.8
Toledo, Peoria & War	237	237				1,130,236	1,155,914		25,678	2.2	4,769	4,777		108	2.2
Wabash.	714	688	26		3.8	4,041,492	4,063,558		22,066	0.5	6,501	6,778		277	4.1
Total, 30 roads.	20,598	19,487	1,166	55	5.7	134,857,940	125,068,399	9,789,541	\$774,348	7.3	\$6,547	\$6,449	\$98		1.5
Total increase.			1,111					9,189,541							

## Bridge Notes.

The King Iron Bridge Co., of Cleveland, O., is building an iron bridge over the Trinity River, in Texas, for the Houston, East & West Texas road. It consists of a main span of 200 ft., a fixed span of 65 ft., and a lifting span of 45 ft. It is nearly finished.

The Keystone Bridge Co., at Pittsburgh, is building an iron lighthouse, to cost \$15,000, for a point on the Mexican Coast, near Tampico.

## Prices of Rails.

Few or no sales of steel rails are reported, and quotations continue at \$67 to \$70 per ton at mill. Prices have reached a point where they are likely to be controlled by the cost of foreign rails.

Some sales of iron rails are reported at \$53 for heavy sections, but the market is generally strong at \$55 to \$56 per ton at mill. The mills have plenty of work, and are not inclined to make concessions.

Old iron rails are nominal at \$35 per ton, with few sales. Railroad spikes at Pittsburgh are quoted at 3½ cents; track-bolts 5 cents per pound.

## Bell Cord.

A sleeping-car conductor came very near being seriously injured at Memphis, Wednesday. The bell-rope to the train had been drawn through the sleeping-coach, which, however, had not been coupled to the train. When the train started off he reached for the bell-rope, crying out, "Stop her," "Stop her," and wrapping the cord around his hand, he was immediately drawn to the top of the car and commenced to cry for help, as he found the cord was about to rend his arm. At this moment a passenger kindly reached up to the rope with his knife and cut it. The conductor fell to the floor, and with a dramatic flourish with his hand, cried out—"Saved! S-a-v-e-d!"—*Nashville (Tenn.) American.*

They are building several narrow-gauge roads out in the mining regions of Nevada, and soon the passenger brakemen will have to wrestle with such names as: Gouge-eye, Belltown, Hungry Cañon, Lay-em-out, Buttermilk Cañon, Paradise, Limburger, Whoop-em-up, Busted Flat, and the like.

The Chicago Tribune describes a brief interview between a Boston millionaire and a clerk in a leading Chicago hotel. The gentleman from Boston is approaching 70 years of age, and was en route to San Francisco: Millionaire—"How is the best way to buy my ticket?" Clerk—"Why, buy a through ticket, of course." Old Gent—"But I may die on the way, and if I buy the ticket through I will be so much out of pocket."

It is wonderful what care men—and women too—take of their good manners when they travel. Many leave them at home for safe-keeping, or at least pack them away so securely that they are never brought out on the road.

## Coupling with a Stick.

The order recently issued on the Eastern Division of the Erie, compelling brakemen to use a stick to make couplings, proves to be a very good one, and we do not hear of near as many coupling accidents as heretofore.—*Port Jervis Gazette.* If such an order were in force up this way, there would be fewer men maimed for life, and less news for the papers.—*Hornellsville Times.*

## Railroad Pigs.

An exchange relates that Count Baranoff, Imperial Commissary of railways in Southern Russia, was recently sent upon a tour of inspection over the Lwow-Sebastopol line in the Crimea, which railway he found to have been so neglected and mismanaged that complaints of the administration were formally laid before him at each successive station on the line by deputations from all classes of the inhabitants. At one particular station a strangely worded protest was addressed to him by the spokesman of a group of land-owners there assembled to seek redress for their wrongs at his hands. "We can not," vociferated this gentleman, "bear with the pigs any longer!" "With what?" exclaimed the count. "With the pigs!" "Which pigs do you mean? I hope you do not allude to the railway officers." "By no means. Truly they are bad enough, but it is the pigs we can no longer endure. Excellency, we are impatient against the pigs." "Will you be good enough to tell me in a word what pigs you refer to?" "Excellency, none other than the railway pigs!" The count, utterly perplexed as to his interlocutor's meaning, insisted on a categorical explanation of the porcine mystery, and succeeded at last in getting at the following curious facts: The subordinate railway officers employed along the line, compelled to submit to exorbitant reductions from their wages at the hands of the cashiers charged with the payment of all current expenses, found themselves so badly off that in order to keep body and soul together they had taken to swine-breeding on a great scale, permitting, nay, encouraging their herds to acquire a remarkable fatness upon the estates contiguous to the line of railway. The circumstance that several valuable farms had been laid waste by hordes upon hordes of hungry swine prompted the passionate protest which, until its true grounds were revealed to him, so puzzled his excellency, Count Baranoff.

## Loading Cars by Water.

An exchange says: "The Manager of the Burlington & Lamoille Railroad, in Vermont, had an ingenious method of conveying cord-wood a distance of two miles, and landing it on the cars. He has erected a small flume from a point near the timber leading to the station. A stream of water from a brook is turned into the flume, and the wood floats down very rapidly, and at the terminus is shot on to the cars, while the water fall-

ing short flows away into the river. Thirty cords of wood are placed on the cars in this manner every day."

## Train Accident Report—Correction.

The two following appeared in the Train Accidents in November:

"On the night of the 17th a freight train on the Connecticut & Passumpsic Rivers road ran into the rear of a preceding freight near Canterbury, Vt., damaging the engine and several cars."

"On the night of the 23d the rear car of a passenger train on the Connecticut & Passumpsic Rivers road jumped the track near Newport, Vt., just as the train was going upon a high bridge. The car struck a pile of lumber standing beside the track, and was thrown back across the rails."

We are informed that neither of these accidents took place on the Passumpsic road, but that they did occur as follows:

Nov. 17, the stock train from line of the Connecticut & Passumpsic Rivers road, while going over the Boston, Concord & Montreal, at Canterbury, N. H., ran into a freight train, standing on the siding, but not in far enough to clear the main track.

Nov. 23, the night passenger-train from Boston to Montreal, via the "Air Line" (Boston, Concord & Montreal, Passumpsic and Southeastern railroads) ran off the track (as stated) soon after leaving Newport, on the Southeastern Railway.

## Extra Care Needed in Winter.

The following order has recently been issued by Superintendent Alexander, on the Chicago Division of the Chicago, Burlington & Quincy:

"To Conductors: Now that winter and bad weather are approaching, it is specially desired that you use great care and see that your trains are not run too fast down hills and through stations. Sudden changes in the weather have much to do with accidents, and conductors should not take the same chances in bad weather that they will in good. We have been very fortunate lately, and if all hands continue to exercise caution and good judgment and observe all the rules, we shall do well and avoid accidents to property and life."

## Adjustable Car Trucks.

An experiment will be made on the Indianapolis & Vincennes, and the Bedford narrow-gauge road, at Switz City this week, with one of James Timm's patent self-adjusting car trucks. Mr. McKenna, Superintendent of the Indianapolis & Vincennes road, speaks very confidently of the success of the experiment, and says the invention is one of the most important and valuable made to railroad machinery. A description would be too lengthy for insertion here; suffice it to say that by an arrangement of adjustable axles, every wheel of the truck being independent, the car will change its gauge by means of a tapering track to any required width, thus enabling transfers to be made from the standard to the narrow and broad gauges or vice versa without a hoister or any delay. In addition to this great advantage, it is found that the truck is far less wearing on curves than the ordinary truck, and for this quality alone the Hocking Valley Company proposes to adopt it on their road. The truck will also be placed on Bell's circus cars, so that they can be run all over the country without change. Mr. Timm, the inventor, is a resident of McConnellsville, Ohio, and until within a short time had no acquaintance with railroads. One day he heard some railroad men talking of the desirability of a substitute for rigid axles in car-trucks, and, after examining one, went and produced his invention, solving a problem that has engrossed the attention of railroad men for





Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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## EDITORIAL ANNOUNCEMENTS.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

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## THE NEW YORK, LAKE ERIE &amp; WESTERN REPORT.

In our issue of Dec. 12, we made some comments on the few but significant figures which at that time had been published concerning the results of the last fiscal year of this company. Since that time the full report of the directors to the stockholders has been published, with very complete information concerning the financial position of the company, the full income account, and a balance sheet. This is not the report to the State Engineer and Surveyor, which does not provide for any income account or balance sheet; but is, in most respects, much fuller and complete in its figures, though not nearly so minute in its division of working expenses, which are lumped under four general heads in the directors' report, while there are 29 in the state report.

Summarizing the general results of the year ending with September, 1879, we may say the road had an increase of 6.3 per cent. in passenger traffic, of 87.2 per cent. in coal traffic, and of 11.6 per cent. in other freight traffic; this work it did with an increase of 5.2 per cent. in passenger-train mileage and 10.1 per cent. in freight-train mileage, and an increase of 0.06 per cent. in passenger expenses and 6.5 per cent. in freight expenses—the increase in train-mileage and expenses being not nearly so great as the increase in traffic. But the increase of earnings was less still—only 1.9 per cent. in the total, against 5.7 per cent. in total expenses and 24 per cent. in total traffic; and there was a decrease of 4.8 per cent. in the net earnings. In the face of an increase of 11.6 per cent. in the general freight traffic (all freight except coal), there was a decrease of 7.7 per cent. in the earnings from that traffic, the average receipt per ton per mile being one-sixth less; and even the tremendous addition of 87.2 per cent. to the coal traffic brought an increase of only 51.1 per cent. in the earnings from coal.

The chief feature in the traffic of the year is this great growth of the coal business. The gain in general freights was large, truly, but not larger than many other roads have had to report—probably not so great in quantity, and perhaps no larger in proportion than the New York Central's gain for the same year,

We cannot say exactly, because the Central does not report the tonnage-mileage of coal separately, as the Erie does.

This calls attention to the fact that no estimate of this road can be well founded which does not take into account the fact that it is a great coal road as well as a great trunk line, and is subject to the same circumstances that make or mar the fortunes of the other coal roads, except that it is not a large producer of coal, and has a much larger traffic which is not affected by the condition of coal business. Nearly one-third of its total freight traffic, and more than a quarter of its freight earnings, were from coal last year, and without the increase in coal there would have been a decrease of \$780,000 in the total earnings, instead of an increase of nearly \$300,000. It is true that the comparison is with a year of exceptionally light coal traffic, but still the coal business of the year is much the largest this road has ever known, as witness the following statement of tons of coal carried on the road for eight years:

1872.....	2,980,680	1876.....	3,307,944
1873.....	3,911,942	1877.....	3,248,110
1874.....	3,854,426	1878.....	2,856,106
1875.....	3,852,507	1879.....	4,410,327

In this great improvement of coal traffic the Erie was much like the other coal roads, which, for the calendar year at least, have had their largest traffic in 1879, following an exceptionally small one in 1878.

Another feature commanding attention is the increase in passenger traffic in a year when, generally, passenger business has been stationary, and when the New York Central's passenger traffic was the lightest in its whole history. It will be a mistake to suppose that the Erie had a large or satisfactory passenger business last year, however. It was better than in 1878, because the 1878 business was very poor. The passenger mileage for eight years has been:

1872.....	156,143,351	1876.....	163,074,795
1873.....	164,633,424	1877.....	170,888,380
1874.....	160,204,125	1878.....	140,326,749
1875.....	155,306,804	1879.....	149,115,718

Thus the traffic last year, though so much more than in 1878, was still much less than in any other year of the eight—in which it reflects, doubtless, the general condition of passenger traffic in this country during the year—a year of large production, heavy freights, small profits, severe economy, and consequently light travel. This condition of things came to an end just about with this fiscal year, since which time the community has been much freer with its money—buys more and travels more. Why the Erie's passenger traffic should increase while the Central's decreased, and to about the same amount, we cannot explain. There was no apparent change in the general course of business or in the competition for it during the year, but the previous year the Erie's business had fallen off much more than the Central's, and in 1879 the Erie was 12.8 per cent. behind its 1877 business, while the Central was but 8.3 per cent. behind its 1877 business. The Central is the great passenger road, having nearly double the Erie's traffic with a mileage only one-tenth greater.

As is known, the scheme of reorganization of this company provided that full interest should not at first be paid on all the issues of bonds outstanding, in order that a larger surplus might remain to be devoted, together with the proceeds of the stock assessments, to the improvement of the road. In pursuance of this policy only \$2,047,718 became due for interest on bonds during the past fiscal year, while full interest, as will be payable in 1884 and after, will be \$4,294,218. The Auditor gives in his report a very useful table showing the amount, rate of interest and rank of each issue of bonds, the date of maturity, and the amount of interest payable yearly until full interest is paid. The amounts payable yearly are:

1878-79.....	\$2,047,712.89	1881-82.....	\$4,298,244.57
1879-80.....	3,964,244.57	1882-83.....	4,230,902.57
1880-81.....	4,208,244.57	1883-84.....	4,294,218.57

A similar table was published last year, which differs somewhat from this, because of some changes in the outstanding bonds, the chief of which is the replacement of \$2,174,000 of old New York & Erie second-mortgage 7 per cents, which became due last year by the same amount of 5 per cents. In 1880 (Oct. 1) \$2,937,000 of fourth-mortgage New York & Erie 7s mature, and there doubtless can be some saving in interest in refunding these, though 7 per cent. is charged in the statements of interest for future years. No allowance is made for interest on the \$2,500,000 of prior-lien bonds provided for by the reorganization scheme, which President Jewett says he hopes it will not be necessary to issue.

The surplus of earnings over expenses and fixed charges in 1879 was \$1,316,105, and this with \$2,036,109 received from stock assessments became available for improvements. The expenditures for these during the year amounted to \$2,836,415, of which about \$1,800,000 was for third rail, second track and sidings, \$366,000 for additions to rolling stock (nearly all for

locomotives), \$125,000 for additional land, and the remainder chiefly for stations, buildings, terminal facilities and an elevator at Buffalo—all very much needed. The enormous addition to the freight-car stock secured during the year (about 6,000 cars; 4,571 were delivered during the year), is as yet the property of the New York Car Trust Company, the railroad company having contracted to pay for them in 20 quarterly installments, with interest. These, by way, were bought at just the right time, when cars were the cheapest ever known; the cost was a little over \$400 each for the first lot of 2,500, and less than \$400 for the rest—the lot would cost half a million more now.

Thus the road is quite another thing from what it was a year ago, though a comparatively moderate sum has been expended upon it. It has a third rail on 1,084 miles of its tracks, 335 of which received it in the last fiscal year; at the end of the fiscal year it had a double track on all but 59½ miles of the 423 from Jersey City to Buffalo, and at the present time little remains to be done to cover all but seven miles of this distance, while in 1878 there were 112 miles of this main line of a great trunk road which had but a single track; of this main line only one-fourteenth is now iron; there has been some addition to the side-tracks, which will be perhaps as serviceable as the second track in relieving the pressure of traffic; progress has been made in providing the facilities for the cheap and rapid handling of cars and freight at the termini, which, when completed, are likely to be of very great value, and, indeed, if the traffic continues to increase as it did last year, actually indispensable; it has obtained an addition of nearly one-half to its stock of freight cars, enabling it to command a traffic such as it would otherwise miss entirely in times of pressure, such as there was last fall, and materially reducing the balance against it for the service of foreign cars—last year, notwithstanding the increase of 28 per cent. in freight traffic, by more than \$100,000; and it has added largely to the capacity and still more to the efficiency of its motive power by the acquisition of very powerful locomotives, whose effect is seen in the increase of the average freight-train load from 159 to 185 tons; the latter being only ten tons less than the average the same year on the New York Central, notwithstanding the much more favorable grades of the latter road.

We commented on the cheapness with which the Erie was worked, in our article of Dec. 12, as the most favorable feature of the report. Truly, it deserves special attention, for the whole future of the road depends upon it. For all its through traffic, which is a very large proportion of the whole—doubtless a much larger proportion, aside from coal, than on the New York Central—it must compete with very complete and cheaply worked roads, the New York Central and the Pennsylvania, whose expenses per unit of traffic have long been among the lowest in the world; for a considerable part of its local traffic it must also compete with the New York Central; for its immense coal traffic it must compete with the anthracite coal roads, which have been put into the most efficient condition that their managers could imagine, at a time when their revenues were abundant and their credit of the best. It has been thought by some that the Erie never could be cheaply worked—probably because its competitors on either side had been more cheaply worked. Somehow it seems to have been supposed that grades such as did not prevent the Pennsylvania from being worked with exceptional cheapness would be an insurpassable obstacle on the Erie; that the second and third tracks, full and modern equipment, steel rails and perfect maintenance, which had saved so much money elsewhere, would save but little here. But the results of the past year, with but a small part of the improvements completed which are actually under way, show a remarkable reduction in the expenses per unit of traffic, which have been brought very close to those of the other trunk lines—helped largely in this by the great increase in traffic, but just as significant, because the other roads still have the larger traffic.

The New York Central & Hudson River having just made its report for the same fiscal year, some comparisons will be interesting. We will premise that differences in the methods of keeping accounts make some differences in the results, the expenses of the Central being made larger than by the Erie's (and the general) practice by charging the gross payments for mileage of foreign cars to expenses, instead of the excess only of payments over receipts for car mileage; this alone makes a difference of about 0.04 per cent. in the cost per ton per mile, and we believe that there are some other charges in the Central's expenses balanced by certain items in its miscella



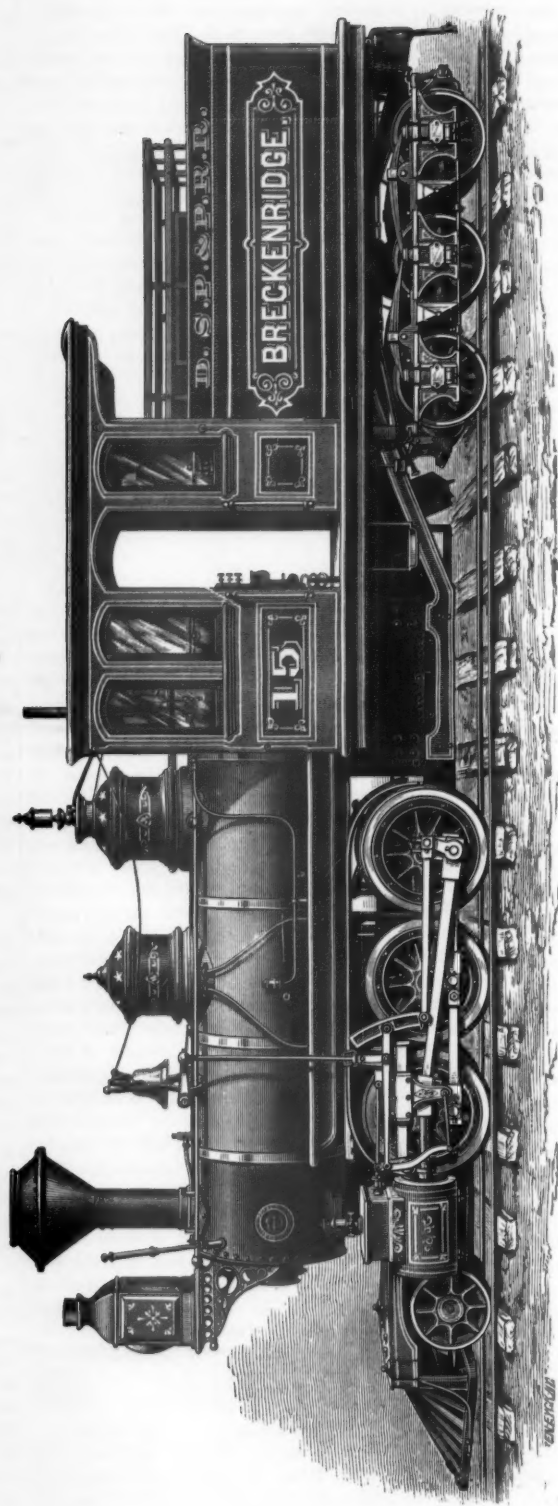
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DOUBLE-TRUCK LOCOMOTIVE FOR THE DENVER, SOUTH PARK & PACIFIC (3-FT. GAUGE) RAILROAD.

*By the Mason Machine Works, Taunton, Mass.*



neous receipts, which in the Erie's and most other railroads' reports would be simply deducted from maintenance expenses, and not appear at all in the receipts. Other differences may be caused by differences in the method of dividing expenses between passenger and freight traffic, so that it is desirable to consider the two branches in connection with each other.

The expenses per unit of traffic were, for the last two years:

	Per passenger-mile.				Per ton-mile.			
	1879.	1878.	Dec. P.c.	1879.	1878.	Dec. P.c.	1879.	1878.
New York Central.....	1.190	1.280	0.090	7	0.540	0.590	0.049	8
Erie.....	1.594	1.693	3.099	6	0.561	0.674	0.113	17

The thing important to consider here is not only the absolute amount of the expense incurred per unit of traffic, but especially the decrease from 1878 to 1879. The New York Central had not needed and had not had any notable improvements, and the decrease on it may be properly chargeable chiefly, or solely, to the large increase of traffic. The Erie had a still larger (proportional) increase in traffic, but it had also the effect of part of the long-neglected improvements, and so should properly show a greater decrease in the cost per unit of traffic. In fact, we find that this decrease was 7 per cent. per passenger-mile and 8 per cent. per ton-mile on the Central, but on the Erie 6 per cent. per passenger-mile and seventeen per cent. per ton-mile. Taking a passenger-mile and a ton-mile together, the decrease in the aggregate expense was  $7\frac{1}{2}$  per cent. on the Central and 9 per cent. on the Erie. The freight traffic being so much greater than the passenger traffic, this is less favorable than the facts warranted to the Erie, whose decrease was much larger on freight.

The conclusion is that the improvements on the Erie are beginning to tell, enabling it to reduce its expenses per unit of freight traffic—which is the only traffic that grows rapidly—nearly to an equality with those of the New York Central. With the same method of charging car mileage, the Central's expense per ton-mile would be but about 0.50 cent, but considering the difference in the condition of the roads even at the end of the last fiscal year, not to say the beginning, the Erie's expense of 0.561 cent must be called remarkably close, and so close that with the second track completed, a full provision of heavy modern locomotives for the through traffic, and provision for the economical handling of freight at the termini, it seems probable that, traffic continuing to grow, the cost of carrying freight will become as low on the Erie as on its great competitor.

While then the effect of the improvements on the cost of carrying seems unmistakable, it is not so certain that they have added greatly to its ability to secure traffic, except so far as they have enabled it to take all the traffic that offered. The growth of traffic was much larger than on the Central, it is true, but by far the greater part of this growth was in coal, which may be called local to this road—at least it is a traffic which is not competed for by the Central to any great extent.

In the through freight traffic the indications are that the percentage of increase was about as great on the Central as on the Erie. But then it must be remembered that previous to 1878 the freight traffic of the Erie had been practically stationary for several years. To be able to have it grow as fast as on rival roads is to it a very great progress.

The earnings per mile of road on the two systems were:

	Erie.	Central.
Freight.....	\$13,183	\$18,270
Passengers.....	3,361	5,953
Other.....	635	4,173
Total.....	\$17,179	\$28,396
Expenses.....	12,042	16,123
Net earnings.....	\$5,137	\$12,273

The rates during the last year having been nearly the same on both roads (0.78 cent per ton-mile on the Erie and 0.796 on the Central; 2.091 cents per passenger-mile on the Erie and 2.05 cents on the Central), the difference in passenger and freight receipts was due chiefly to the difference in traffic. This, per mile of road, was:

	Erie.	Central.
Ton-miles.....	1,690,979	2,295,827
Passenger-miles.....	160,685	290,053

The Central, therefore, had 35 per cent. more freight traffic and 80 per cent. more passenger traffic per mile of road than the Erie, which accounts for its greater earnings of 65 per cent., and, in connection with its lower working expenses, and its immense miscellaneous earnings (which are charged with no part of the working expenses), for its greater profits of nearly 140 per cent. per mile of road.

The stocks and funded debts per mile of road owned of the two systems are:

	Erie.	Central.
Stock.....	\$172,225	\$120,819
Bonds.....	134,724	54,560
Total.....	\$306,949	\$175,379

The Erie owns 495 miles of road, and the Central

740. The difference per mile of track owned is much more in favor of the Central.

The yearly fixed charges per mile of road worked, including interest and rentals (the year 1880 being taken for the Erie, on which some of the rentals are variable, and whose interest charge increases a little after 1880), are as follows for the two companies:

Erie.....	\$5,426
New York Central.....	4,680

The aggregate of interest and rentals of the New York Central is \$4,689,025, against the Erie's \$5,035,142 in 1880.

To pay 7 per cent. dividends on the preferred stock of the Erie will require \$614 more net earnings per mile of road worked, and every 1 per cent. on the common stock will require \$831 more. To cover the current year's fixed charges the road must increase its net earnings about 6 per cent. over those of 1879, which result will doubtless be largely exceeded. The same profits per mile of road from freight as on the New York Central, with the present passenger profits, would add \$1,914 to the surplus revenue per mile of road, and would make the net earnings \$7,051 per mile of road. This would be \$1,625 in excess of this year's fixed charges, which would pay 7 per cent. on the preferred stock and about  $1\frac{1}{4}$  on the common.

The profits of the road, of course, depend chiefly upon the rates obtained; the 1878 rates (estimating coal separately from other freight) would have added more than fifty per cent. to the profits of 1879. But changes in rates will affect all the trunk lines and coal roads pretty much alike, and such an addition to the average as will yield the Erie 1 per cent. on its stock, will yield the New York Central an addition to its dividend of about  $1\frac{1}{2}$  per cent., and the Pennsylvania one of  $1\frac{1}{2}$  per cent. In the case of the Erie, whatever advance of rates may be had will probably be supplemented by a greater reduction of expenses than the other roads, already in prime condition, will be able to effect.

#### SAFETY AT DRAW-BRIDGES.

On another page a letter from a well-known railroad superintendent is published, containing some comments on the observations of Mr. Charles Francis Adams, Jr., about draw-bridges in his book on railroad accidents, which has recently been published. In this, the latter gentleman says, "to have recourse to stopping [at crossings or draw-bridges] \* \* \* is entitled to just about the same degree of respect as would a proposal to recur to pioneer engines as a means of preventing accidents to night trains." Commenting on this, our correspondent says: "We adhere to the 'full stop' rule, in each instance. If this be useless we should abandon it."

Observing the principle, that not only have all questions two sides, but most of them are at least hexagonal, we are not disposed at once to give a categorical answer either for or against the full-stop rule.

It may be said, in the first place, that it is impossible to assent to Mr. Adams' proposition that "the danger of collision at crossings" is undoubtedly much greater than that of going through open draws without such important qualifications as to amount almost to its denial. It would be true if applied to a draw, for example, which seldom opened, say once a week, and a crossing over which many trains pass in a given time, say one per hour. Analyzed it will be found that the danger of the two classes of accident are exactly proportional to the time the draw is open and the track fouled by crossing trains. Thus on any road, if a draw is open on an average of say 20 or 30 minutes each day, the risk of trains running into it is exactly the same as that of a collision at a crossing if the transverse trains occupy the intersecting point an equal length of time. The observance or non-observance of signals is equally probable in each case. The danger to life, limb and property resulting from such accidents is, however, very much greater at the draw-bridge than at the crossing. The moment that the centre of gravity of a locomotive is over the abutment of a draw, the lives of the engineer and fireman are in imminent danger, and if the train has sufficient momentum to carry the cars over, many of their occupants are certain to be killed and injured. A collision, on the other hand, may be of any degree of destructiveness, from that of smashing a cow-catcher or overturning a freight car to the cutting in two of a passenger car and the killing and maiming a large portion of those in it. It is rare, though, that a collision of this kind results in injury to the people in more than one or two cars, whereas bridge accidents are almost certain to injure a large proportion of the passengers of each car that goes over the abutment. The risk, therefore, to life and property in this latter class of accidents is much greater

than at a crossing, if the track is broken or obstructed the same average length of time in each case.

It may be said, of course, that in most cases there is a smaller number of vessels to pass through draws than there is of trains to pass over crossings. On the other hand, a draw must be open a much longer time to pass a vessel than a track if obstructed by a crossing train, so that after all the risk of accident (observed not to life and property) is proportional to the time the track is broken or obstructed in each case.

On many roads the danger of crossings is considered sufficiently great to lead to the enforcement of the dead-stop rule, so that if the wisdom of such a regulation for crossings is admitted, the obligation to enforce it at draw-bridges, which are more dangerous to life and property, the circumstances being equal, necessarily follows.

But Mr. Adams denies that it is necessary in either case. His argument "that neither at grade crossings nor at draws has the mere stopping of trains proved a sufficient protection," and the inference therefrom that therefore trains should not be stopped, need only to be applied to some other precautions against accidents to show its fallacy. Tail lights on trains are used almost universally, but are as ineffectual in preventing rear collisions as the full-stop rule is in protecting crossings and draw-bridges. Should the use of tail lights therefore be abandoned?

The error in Mr. Adams' reasoning—if it has been fairly presented above—seems to be that his main proposition has not been stated with sufficient precision. The reasoning seems to be somewhat like this: The mere stopping of trains does not prevent all accident at crossings and draw-bridges, therefore it should be abandoned. Applied to rear signals the argument would be: Tail lights do not prevent all rear collisions, therefore their use is absurd and unnecessary. To this it would be answered that while tail lights do not prevent all accidents from rear collision, they prevent a great many, and therefore are very useful. The same is true of the dead-stop rule.

But it may be said this statement of Mr. Adams' argument is not fair, in that it does not give the whole of it, which is somewhat as follows: The dead-stop rule has been ineffectual in preventing accidents at draw-bridges in this country; in Great Britain, where that rule is not observed, "not a single case of disaster of any description has been reported as occurring at a draw-bridge since the year 1370," which makes it appear very probable, if not certain, that the precautions and means of preventing such accidents there are effectual, while our rule is not. But, assuming that the facts are as stated, the question arises, what sources of danger at drawbridges are eliminated by the system of interlocking signals, in use in Great Britain.

It is evident that an accident at a draw-bridge may occur in one of two ways: first, the attendant may fail to give the proper signal; or, second, the locomotive-runner may not observe it.

Considering these in the order in which they are stated, it is evident that if an ordinary hand signal is used, it is a voluntary act on the part of a bridge-tender whether he displays the danger signal or not when the draw is opened. He may forget, or neglect, or fail to do so, from any of the many motives which lead us to do the things we ought not to, and leave undone those we should do. To guard against such an omission the signal must be attached to the bridge, so that when it turns the signal will turn, and thus make it impossible to open the one without displaying the other. It was found, though, that if the bridge is moved only a few inches, it is sufficient to disturb the integrity of or "break" the track so as to cause an accident. In fact, in order to make the track secure at bridges, the latter, when closed, are locked or bolted so that the rails on the bridge will conform exactly with those on each side of it. If then the lock is unlocked or the bolt is withdrawn, there is danger that the jar of an approaching train may disturb the track and destroy its continuity, and thus the train may get off the rails and cause an accident. This occurred on the Long Branch line of the Central Railroad of New Jersey, in 1877, and seventy persons were then injured, of whom five died. To avoid such danger, the next step taken was to connect the signal with the lock or bolt of the bridge in such a way that the latter could not be unlocked or the bolt withdrawn without first displaying a danger signal, and the apparatus was also arranged so that the signal for line clear could not be given until after the bridge was closed and locked. This made it a mechanical impossibility for a bridge-tender to fail to give the proper signal, and entirely eliminated the first source of danger.

Another one, however, still remained. In certain states of the atmosphere, and at some localities, it is difficult or impossible to see the signal at a sufficient

\* Grade crossings, of course.



distance from the bridge to stop the train before reaching it. To provide against this, what are called distance signals were added. These were placed one, two or three thousand feet from the bridge, and were a preliminary warning to approaching trains. This, it would seem, must endow a bridge-tender with absolute infallibility, at least so far as the display of signals is concerned. But one risk still remained. It was possible for a bridge-tender to close the bridge and place the signals to indicate line clear, and then, through some contradictory or unexplicable motive, which sometimes takes control of men in a fatal moment, he might unlock the bridge after the train had passed the distance signal and when it was too late to arrest its speed before arriving at the bridge. Doubtless some mechanical contrivance could be devised by which the bridge-bolt would be secured in its place when a train had passed a distance signal indicating line clear, and would not be released until the train had crossed the bridge. Such an arrangement would seem to make it absolutely impossible to give a wrong signal, and would thus eliminate this element of danger entirely.

But all these contrivances and precautions apply to the display alone of signals, and not to their observance. Even when they are provided and used, it is still possible for a locomotive-runner to disregard them. The proneness of men to do this, only those who have had some experience in railroads can know. Men go to sleep at times while in the performance of their duties, and will run in the very face of signals, as it were, in defiance of their own senses. Mr. Adams mentions a case on the Boston & Maine Railroad where, after coming to a dead stop before reaching a drawbridge, the engineer then started the train forward, and although moving at a speed scarcely faster than a walk, it was run into an open draw. The bridge-tender, however, had forgotten to set the signals, and the morning was foggy, which was some excuse for the engineer. The "over-running of signals" in the reports of the British Board of Trade is given as one of the most prolific causes of accident, and no effective means has yet been adopted to prevent it. With the most approved system of interlocking signals, if in a single case an engineer should disregard them at a draw-bridge, an awful accident is certain to result. The danger, as has been pointed out, is very much greater at such a place than at a crossing, a junction or a switch. At these latter, signals are often disregarded without very serious consequences, but at a draw a disaster will inexorably follow such neglect.

It is hardly worth while now to inquire whether some system may not be devised whereby a locomotive-runner may be reminded of neglect in observing signals through some other sense than that of sight, in case he should pass a danger signal. Various devices, such as torpedoes, gates and automatic appliances which would blow the whistle of the locomotive, shut off steam and apply the air brakes, have all been proposed, but, so far as our information goes, none of these have proved themselves to be of sufficient practical value to lead to any very general or continued use. The most complete system of interlocking signals undoubtedly diminishes very largely the risk at draw-bridges, and to that extent lessens the necessity of enforcing the full-stop rule. A prominent engineer who has spent much time in England and on English railroads is our authority for saying that the practice there is to slow up on approaching a draw. If distance signals are provided and this rule is observed, there can be no doubt that it gives a very high degree of safety, but as all railroad men know, it is extremely difficult to secure the strict observance of this rule. On a prominent Western road the General Superintendent was obliged to employ detectives to enforce the full-stop rule at crossings, although it was the duty of the signal-man at that point to report all locomotive-runners who failed to observe it. The enforcement of either the full-stop or the slow-up rule will depend very much on the supervision to which the train-men are subjected, and unless they know that they are under constant and rigid inspection, they are almost certain to violate either of them at certain times. The full-stop rule, though, has the advantage that it is positive and absolute, whereas the question whether the speed of a train was slow or fast is nearly always a matter of dispute.

It should be kept in mind, too, that if the full-stop rule is enforced, obedience to it becomes a habit, whereas, if trains approach draws without stopping, this also becomes a habit, the strength of which bears some proportion to the infrequency that the bridge is open. In the one case we have the force of habit to help us in securing safety, whereas in the other the same thing inclines to the encounter of danger. When the full-stop rule is observed, the probability that a

locomotive-runner will fail to conform to it, and at the same time not observe the signals, is very remote indeed.

On the other hand, if a home and a distance signal are provided, and the slow-up rule adopted and enforced by rigid inspection and supervision at the distance signal, a failure to obey it, and to observe both the distance and home signal is also a very remote probability, although still possible.

On the Hudson River Railroad, Mr. Buchanan has devised an arm which consists of a spring attached to a semaphore signal post. When the signal is raised to danger, this arm extends out longitudinally far enough to strike the cab windows of the engine. If a locomotive-runner should pass this signal when at danger he would be reminded of it by the crash of broken glass, which would also be a record against his neglect. There seem to be no objections to the use of this contrivance, excepting that its only use is in cases of danger, and experience shows that only the most rigid discipline will be able to maintain such appliances in an efficient condition. It was found years ago that brakes of various kinds, which were to be used only in cases of danger, were often not in an efficient condition when the occasion occurred to use them. The same thing is true of many of the check-chains in use on cars to-day. There is, therefore, more or less risk in relying upon such appliances, unless, as has been said, the most rigid discipline is constantly maintained. Even with every inclination to do this on the part of a manager, a super-economical board of directors may make it impossible to do what he knows should be done.

As was remarked in the beginning of this article, the question under consideration does not seem to admit of a decisive answer either *pro* or *con.*, but from what has been said, the following conclusions may be drawn:

1. No draw-bridge is safe without a signal which is interlocked with the bolt that secures or fastens the bridge in its position.
2. The slow-up should not be substituted for the full-stop rule unless there is an efficient interlocking system of home and distance signals and the locomotive runners are at the same time subject to constant and rigid supervision at the point where the distance signals are located, or, in the absence of this, some effective appliance is added to the distance signals to remind the locomotive-runner of its position by an appeal to some other sense than that of vision.
3. With interlocking distance signals, and in any location, the speed of the train in passing them should always be so slow that a full stop could be made by applying the hand-brakes and reversing the engine in half the distance from the bridge.

#### November Earnings.

November earnings are reported in our table by 33 railroads, which have this year an aggregate of 21,913 miles of road and 8.3 per cent. more than last year. This is a little more than one-fourth of the total mileage in operation in the United States. These roads carried this year in November \$15,292,780 and 13.4 per cent. more than last year, their average earnings per mile of road having increased from \$667 to \$698, or 4.6 per cent., which, as November was a very favorable month in 1878 (and 1877 also), is a very satisfactory result, the more so as the increase of mileage was so great. Of the 33 roads reporting, all but six show an increase in total earnings and also in earnings per mile.

Below we give the earnings per mile of road in November of 21 roads for the past three years, and of 19 of them for the past four years:

	1876.	1877.	1878.	1879.
Atch. Topeka & S. F.	\$318	\$452	\$505	\$638
Burl. C. R. & N. H.	258	328	298	326
Calo & St. Louis	138	111	136	158
Central Pacific	1,027	698	744	637
Chicago & Alton	542	578	589	711
Chic. & East. Ill.	411	411	473	556
Chic. Mil. & St. P.	547	632	468	505
Chic. & N. W.	630	630	669	702
Cleve. Mt. Vernon & Del.	191	229	220	214
Hannibal & St. Jo.	523	500	712	645
Ill. Cen. in Ill.	608	579	600	556
Ill. Cen. in Iowa	362	361	317	336
Int. & Gt. North.	468	358	454	460
Mo., Kan. & Tex.	413	349	369	492
Mobile & Ohio	540	480	588	611
St. L., A. & T. H., B'ville Line.	685	663	721	741
St. L., Iron Mt. & So.	657	669	782	958
St. L. & San Francisco	372	348	361	419
St. L. & S. E.	268	271	303	299
Tol. P. & Warsaw	426	389	380	443
Wabash	584	574	658	601

From this it appears that of the 21 roads reporting for three years, 15 had larger earnings per mile in 1879, than in 1878, and 15 also larger in 1879 than in 1877; while of 19 roads reporting for the four years, 14 had larger earnings in 1879 than in 1876.

For the eleven months ending with November we have reports from 30 railroads with 20,598 miles of road in 1879, which is 5.7 miles more than they worked in 1878. With this mileage they earned \$134,857,940, which is 7.3 per cent. more than they earned in 1878, their average earnings per mile of road having increased from \$6,449 to \$6,547, on 1.5 per cent.—not a great change. Earnings, however, were better in 1878 than for some time previously. Only one-half of 1877 was a good year, but the whole of

1878 and 1879 have been—that is, good years for traffic and good for earnings for such roads as got tolerable rates.

Of the 30 roads reporting for the year, 21 show an increase in total earnings and 20 in earnings per mile of road. In the latter there were three increases of 15 per cent. or more—15.1 on the Mobile & Ohio, 23.9 on the Chicago, St. Paul & Minneapolis, and 35.6 on the Atchison, Topeka & Santa Fe. The large decreases (only one more than 10 per cent.) were on roads that largely increased their mileage during the year, the new road having much lighter earnings than the old.

#### The Tay Bridge Accident.

The telegraph has brought the news of one of the most remarkable and distressing railroad accidents in Scotland that has ever occurred. The news up to the time of going to press does not make it clear how the accident occurred, but there can be no doubt that a number of girders of the bridge named fell, and, either with them or afterward, a whole passenger-train went down into the sea, and not a single occupant of the train survived to tell of the catastrophe. The loss of life is not known, but the highest estimate is of over 300 persons, and the lowest about 75.

The bridge is on the North British Railway across the Firth of Tay. The object of the work was to shorten the route between Edinburgh, Glasgow and Dundee, and to enable traffic to be taken directly across the Firth, a distance of nearly two miles (10,321 feet) by rail into the latter city, instead of being ferried across or transported around a considerable detour by way of Perth.

The work was begun in 1871 under the engineering supervision of Mr. Thomas Bouch. It consisted of 85 spans, disposed as follows: Six spans of 27 ft., fourteen of 67 ft. 6 in., fourteen of 70 ft. 6 in., two of 88 ft., one of 162 ft., one of 170 ft. and thirteen of 245 ft. The long spans near the centre of the bridge, which appear to be the ones which gave way, were 88 ft. above high water. A late dispatch says that the entire thirteen girders of the long central spans are gone. Each pier was formed of two huge iron cylinders 9 ft. in diameter, which were sunk by the pneumatic process. The water at the place where the bridge fell was about 45 ft. deep.

The girders were of the lattice form, with "double triangulation" and trough top and bottom chords. The depth of the girders was one-eighth of the span.

At the time of the construction of the bridge there was some discussion of its strength to resist wind pressure, and some engineers asserted flatly that the structure would be blown over.

In answer to these, one of its promoters said, in a paper published in *Engineering*:

"The exposed surface of one large pier is about 800 square feet, and of the superstructure, which depends upon it, about 800 ft. more, and so, giving 800 ft. for a train above, we have 2,400 square feet. Twenty-one pounds per square foot is the force of a very strong gale; but it would take no less than 96 lbs. per square foot on the surface given to overturn the pier. Even the most severe hurricane on record would equal only one-half this resistant power."

At present, it is impossible to tell to what cause the failure of the bridge is attributable. One account says the night was one of bright moonlight, but the wind was blowing a hurricane; another that "the wind blew in tremendous gusts" and "the rain was drenching." It is also said "that it is unknown whether the girders were blown down before the train entered the bridge or were carried away with it."

The accident seems to be similar to that which occurred to the Havre de Grace Bridge in this country, some years ago, when eleven spans out of thirteen were all blown into the Susquehanna River. This, however, was a wooden bridge, and it is generally supposed that iron structures are less liable to such accidents.

#### Double-Truck Locomotive.

The full-page engraving with this number represents a form of double-truck engine, that Mr. Mason has recently been building for narrow-gauge railroads. The plan is, however, as well suited for the standard or any other gauge roads. It will be noticed that he has added a single pair of small wheels, or a pony truck, to the driving truck. In the first engines of this plan which he built, this pair of wheels was not used. It has been applied in order to carry the overhanging weight of the cylinder, and also to protect the flanges of the front driving wheels from wear.

The dimensions of the engine are as follows: Cylinders, 14 x 16; driving wheels, 37 in. diameter; total wheel base, 29 ft. 8 in.; to front driving wheel, 24 ft. 8 in.; wheel base of driving truck, 6 ft. 7 in.; weight on latter, 48,000 lbs.; capacity of tank, 1,400 gallons.

Boiler made of best Pennsylvania coal-blast charcoal iron,  $\frac{5}{8}$  in. thick; waist, 42 in.; diameter; 113 tubes, 2 in. diameter, and 9 ft. 10 in. long; fire-box, 48 in.-long, 37 $\frac{1}{2}$  in. wide, and 50 in. high inside, made of best homogeneous steel; side and back sheets,  $\frac{5}{8}$  in. thick; flue sheet,  $\frac{1}{2}$  in.; water space, 8 in. wide at bottom, 3 $\frac{1}{2}$  in. wide at top, two injectors.

Valve gear of the Walschurts pattern. Leading truck of an original pattern. Equalized with forward drivers and adjustable, so as to prevent cutting of the flanges of the tires without lifting the forward end of the engine in passing curves.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Selma & Greensboro.—Extended from Marion Junction, Ala., southeast to the New Orleans & Selma road near Salt-marsh, 8 miles.



*Peninsular, of Florida.*—Track laid from Waldo, Fla., southward to Lubboosa, 20 miles.

*Boston & Lowell.*—The track of the *Lawrence Branch* is extended about  $\frac{1}{2}$  mile to the new depot in Lawrence, Mass.

*Kansas Pacific.*—The *Salina & Southwestern* branch is extended from Lindsborg, Kan., south to McPherson Centre, 25 miles.

*Chicago, Burlington & Quincy.*—The *Albia, Knoxville & Des Moines Branch* is extended from Pleasantville, Ia., northwest to Des Moines 23 miles, completing the line.

*Indianapolis, Decatur & Springfield.*—Extended eastward toward Indianapolis 25 miles.

*Chicago, Milwaukee & St. Paul.*—The *Iowa & Dakota Division* is extended west by south to Niobrara, Dak., 56 miles.

This is a total of 157 $\frac{1}{2}$  miles of new railroad, making 3,801 miles reported thus far for 1879.

THE SOUTHERN RAILWAY AND STEAMSHIP ASSOCIATION, as will be seen by report of proceeding published this week, made considerable changes in its rates and methods of operation at its meeting in Atlantic Dec. 16, 17 and 18. Among these were the appointment of a board of arbitration, one of whose members is the Virginia Railroad Commissioner, and another one of the Georgia Railroad Commissioners, the third being Col. W. R. Arthur, well-known as Superintendent of the Illinois Central, and latterly of St. Louis roads. This association has some very difficult problems to deal with, the competition of markets, as well as the competition of railroads and steamers, complicating the adjustment of rates to an unusual extent.

#### NEW PUBLICATIONS.

The *National Car-Builder*, well known to railroad men for many years, has become the property of Mr. R. M. Van Arsdale, and the January number appears in a new dress and a new head, which greatly improves its appearance. The *Car-Builder* is carefully edited by Mr. James Gillet, who remains, and has some peculiar features which make it convenient for reference, aside from the value of its general contents, consisting of lists of master mechanics and master car-builders, superintendents and purchasing agents, which a great many people have frequent occasion to consult.

### General Railroad News.

#### MEETINGS AND ANNOUNCEMENTS.

##### Meetings.

Meetings will be held as follows:

*New York, New Haven & Hartford*, annual meeting, in the Temple of Music, New Haven, Conn., Jan. 14, at 11 a. m.

*Pennsylvania & New York*, annual meeting, at the office in Philadelphia, Jan. 12, at noon.

*Philadelphia, Wilmington & Baltimore*, annual meeting, at the office in Wilmington, Del., Jan. 12, at 1 p. m.

##### Dividends.

Dividends have been declared as follows:

*Philadelphia Wilmington & Baltimore*, 4 per cent., semi-annual, payable Jan. 2.

*Norwich & Worcester* (leased to New York & New England), 5 per cent., semi-annual, payable Jan. 8.

*Fitchburg*, 3 per cent., semi-annual, payable on demand.

*Portland Saco & Portsmouth* (leased to Eastern), 3 per cent., semi-annual, payable Jan. 15.

*Ware River* (leased to Boston & Albany), 3 $\frac{1}{2}$  per cent., semi-annual, payable Jan. 7.

*Concord & Portsmouth* (leased to Concord), 3 $\frac{1}{2}$  per cent., semi-annual, payable on demand.

##### Foreclosure Sales.

The *Macon & Augusta* road is advertised to be sold in Augusta, Ga., March 2, by William M. Reese, Trustee, under the second mortgage for \$370,000. The bonds under this mortgage are held by the Georgia Railroad Company, which will probably buy in the road and acquire full possession of it, subject to the first mortgage for \$400,000. The road is 78 miles long, from Warrenton, Ga., to Augusta; it was built in the interest of the Georgia road, and has always been worked by that company.

##### Central Railroad Rate Association.

A meeting of this new association was held in Chicago Dec. 23. Mr. J. M. Osborne, of the Wabash, presiding, and Mr. C. B. Lewis, Secretary.

The Executive Committee presented a report, fixing arbitrary rates on freight from Eastern points to junction points in Illinois, and grain rates from junction points in Illinois to Eastern sea-board points.

After a long discussion, the report was adopted, with a few slight amendments. It was decided to have the east-bound rates take effect Jan. 1, and the west-bound rates Jan. 15. The meeting then adjourned.

#### ELECTIONS AND APPOINTMENTS.

*Atchison, Colorado & Pacific.*—The following officers have been chosen for this company which owns the Central Branch, Union Pacific, extension lines: President, R. M. Pomeroy, Boston; Vice-President, Edgingham H. Nichols, New York; Secretary, Thomas J. White, Atchison, Kan.; Treasurer, A. J. Barnes, New York.

*Atlantic & Pacific Telegraph.*—Mr. Albert B. Chandler has been chosen President, in place of Gen. T. T. Eckert, resigned.

*Boston, Hoosac Tunnel & Western.*—At the annual meeting in Troy, N. Y., last week, the following directors were chosen: Coe F. Young, Honesdale, Pa.; Solomon S. Guthrie, Buffalo, N. Y.; George I. Post, Fairhaven, N. Y.; Geo. R. Blanchard, New York; Frederick L. Ames, Oliver Ames, North Easton, Mass.; F. Gordon Dexter, Beverly, Mass.; John B. Alley, Lynn, Mass.; John W. Candler, Brookline, Mass.; John R. Brewer, Hingham, Mass.; Elisha Atkins, Wm. L. Burt, A. A. Gaddis, Boston. The only new director is Oliver Ames, who succeeds ex-Gov. Claflin.

*Chesapeake & Ohio.*—At the annual meeting in Richmond, Va., Dec. 30, the following directors were chosen: John Echols, Williams C. Wickham, of Virginia; John Castree, Edward T. Fournier, A. S. Hatch, Elias S. Higgins, Jesse

Hoyt, C. P. Huntington, Abiel A. Low, A. E. Orr, Ezra Wheeler, of New York.

*Columbus & Rome.*—At the annual meeting held Nov. 2, the following officers were chosen: E. C. Hood, President; T. J. Nuckolls, General Manager; M. E. Gray, Secretary, Treasurer and General Freight and Ticket Agent; A. Dexter, Chief Engineer; W. A. Little, Attorney. The company owns what was formerly the North & South Railroad, of Georgia. Its office is at Columbus, Georgia.

*Dorchester & Delaware.*—At the recent annual meeting in Cambridge, Md., the following were chosen: W. Wilson Byrn, President; E. W. Lecompte, John B. Brown, John Webster, Dr. Charles Jefferson, Dr. R. G. Elligood, John N. Wright, James Gore, directors.

*Flint & Pere Marquette.*—Mr. John Francis has been appointed Traveling Passenger Agent, in place of H. C. Potter, Jr., transferred to duty in the Receiver's office.

*Pt. Madison & Northwestern.*—Mr. S. B. Kenrick is Superintendent, with office in Ft. Madison, Ia. He was formerly for eight years Superintendent of the Green Bay & Minnesota road.

*Indianapolis, Peru & Chicago.*—Mr. Wm. B. Cutting, late Vice-President, has been chosen President, in place of David Macy, resigned. Mr. V. T. Malott, General Manager, has been chosen Vice-President also, in place of Mr. Cutting.

*Lake Erie & Western.*—Most of the elections and appointments for the consolidated company have been heretofore noted, but the following full list of officers is made up from official circulars, the appointments dating Jan. 1, 1880: President, C. R. Cummings; First Vice-President, Daniel P. Eels; Second Vice-President, J. H. Cheney; Secretary and Treasurer, B. G. Mitchell; General Counsel, C. S. Brice; General Manager, E. H. Waldron; Assistant Treasurer, A. D. Thomas; Assistant Secretary and Auditor, A. J. Castater; Assistant Auditor, L. A. Hill; General Freight Agent, W. S. Weed; General Passenger Agent, G. W. Smith; Purchasing Agent, E. H. Andress; Chief Engineer, T. H. Perry; Superintendent Eastern Division, Geo. G. Hadley; Superintendent Western Division, D. S. Hill; Superintendent of Equipment, C. E. Gore; Assistant Superintendent of Equipment, Everett Clemons.

The general offices of the company are at LaFayette, Ind., where all the officers may be found, except the Superintendent Eastern Division and the Assistant Superintendent of Equipment, whose headquarters are at Fremont, O.

A special order places the Chief Engineer in charge of all road, bridges and buildings, and constructive work; further directing that no new work be undertaken in these departments without an order from the Chief Engineer.

*Lake Shore & Michigan Southern.*—Mr. E. Gallup has been appointed General Passenger Agent, with headquarters in Chicago. The office is a new one. Mr. Gallup has been General Passenger Agent of the Boston & Albany a little over a year.

*Lexington & Black River.*—This company was recently organized at Lexington, Mich., by the election of the following directors: J. C. Waterbury, R. Papst, B. R. Noble, W. R. Nims, C. S. Nims, Watson Beach, Peter Jannette. The board elected J. C. Waterbury, President; R. Papst, Vice-President; M. D. Waggoner, Secretary; B. R. Noble, Treasurer.

*Long Island.*—Mr. Hugh Longest is now Master Car-Builder of this road and its leased lines.

*Louisville, New Albany & Chicago.*—It is reported that Mr. John McLeod, late General Superintendent of the Louisville, Cincinnati & Lexington, is to be General Manager of this road under its new ownership.

*New York & New England.*—The new board has re-elected William T. Hart, President; James H. Wilson, Vice-President and General Manager; George B. Phippen, Jr., Treasurer; James W. Perkins, Secretary.

*Peoria, Pekin & Jacksonville.*—Mr. John S. Cook has been appointed Traffic Manager of this road, with office in Peoria, Illinois.

*Pittsburgh Southern.*—Mr. J. W. Mitchell has been appointed Assistant Treasurer and General Freight and Ticket Agent, with office in Pittsburgh. Mr. N. P. Ramsey is appointed Auditor, with office at West Pittsburgh.

*Richmond & Allegheny.*—At the recent annual meeting the following directors were chosen: H. C. Parsons, Richmond, Va.; John C. New, Indianapolis; C. H. McCormick, Chicago; John P. Jones, Virginia, Nev.; Henry Miller, Columbus, O.; James G. Blaine, Augusta, Me.; J. H. Bartholomew, Hartford, Conn.; James B. Houston, Hugh McCulloch, New York.

*Santa Fe Canal.*—At the annual meeting in Waldo, Fla., Dec. 18, the following directors were chosen: Geo. C. Rixford, Benj. B. Ewing, C. Lucian Jones, Robert W. Campbell, Charles K. Dutton, H. Bittitt, Hardee Raulerson, Hiram Alderman. The board elected Major Charles K. Dutton, President; Daniel S. Place, Secretary; James F. Furguson, Treasurer; Ned E. Farrell, Chief Engineer and Superintendent.

*St. Louis & Southeastern.*—The Nashville American says: "Mr. E. Culverhouse, Superintendent of the Owensboro & Nashville Railroad, has been appointed General Manager of the St. Louis & Southeastern Railroad, under the management of the Nashville, Chattanooga & St. Louis Company, to whom the railroad will be turned over Jan. 1."

*Sedalia, Warsaw & Southern.*—The officers of this company are: President, Wm. Gentry; Vice-President, R. H. Smith; Secretary, J. D. Crawford; Treasurer, Cyrus Newkirk; Chief Engineer, J. B. Polley. Offices at Sedalia, Mo.

*Toledo, Delphos & Burlington.*—The following appointments are announced: G. G. Grund, General Ticket Agent, in place of D. L. Williams, resigned. All communications relating to passenger rates will be sent to him. Communications relating to the Freight Department should be sent to I. H. Burgoon, General Superintendent, and everything relating to accounts, both freight and passenger, to J. W. McElvaine, Auditor. The offices are at Delphos, O.

Mr. George H. Tier is appointed Master Mechanic. Mr. John Dolt is appointed Road-Master, with office at Delphos, O., and will have charge of all track east of State Line. Mr. E. H. Justice is appointed Road-Master, with office in Bluffton, Ind., and will have charge of all track west of State Line.

*Wabash, St. Louis & Pacific.*—Mr. H. A. Fisher has been appointed Passenger Agent for the state of Michigan, with headquarters in Detroit. He has been Excursion Agent of the Wabash for some time.

*Western Nevada.*—The directors of this new company are: A. J. Rhodes, Belleville, Esmeralda County, Nev.; G. L. Woods, San Jose, Cal.; J. T. Davis, S. M. Holmes, James Meehan, San Francisco.

*Wheeling & Lake Erie.*—At a recent meeting in Norwalk,

O., W. A. Mack was re-elected President and Charles Jenkins, Secretary.

#### PERSONAL.

—The Burlington *Hawkeye* of Dec. 30 says:

"The promotion of Mr. C. H. Chappell to the assistant general superintendency of the Chicago & Alton Railroad is another instance of what an energetic, active young man, whose heart is in his work, can accomplish. Like Mr. T. J. Potter, the Assistant General Manager of the Chicago, Burlington & Quincy, Mr. Chappell has had no influential friends to push him along, and each step upward has been given both these gentlemen because they were the best men for the places, and for no other reason.

"But a few years since, Mr. Chappell was a Chicago, Burlington & Quincy brakeman, thence called into the office of Superintendent Hitchcock, at Galesburg, Illinois, as a clerk, since when, his advancement has been as rapid as his devotion to the interests entrusted to him has been untiring. His many friends on the Chicago, Burlington & Quincy will be glad to know that his merits are so substantially recognized, and their good wishes will follow him still higher.

"There is a valuable lesson in these two examples which railroad employes would do well to heed. The too-commonly accepted idea is, that promotion in railroad ranks is rendered difficult by the great number of those employed, and that influence, or influential friends, are a necessity toward securing it. The real truth is, and without exception railroad managers will bear testimony thereto, that one of their greatest difficulties is to find men whose antecedents and merits are such that they dare promote them. Good and reliable men who have so trained themselves as to be fitted for increased duties and cares are a much scarcer article than is generally supposed. The reputation and success of a railroad superintendent probably depend more upon the promotions and appointments he makes than upon any other one thing. If those under him are competent, economical and faithful to their duties, his success is assured. Fully realizing that of the endless details for which he is responsible, but few can possibly come under his personal observation, his anxiety is, regardless of influence or anything else but ability, to avoid mistakes in his appointments, selecting only those upon whom he may implicitly rely. That class of employes who expect advancement simply because they have been with the company a number of years, forgetting the fact that in itself that only proves they have done well the work for which they have been paid, or have not been caught in their derelictions, are usually passed over, the promotion falling to some one who has not only been faithful in his present duties, but has quietly studied the positions above him, and rendered himself competent to fill them."

—Mr. David Macy has resigned his position as President of the Indianapolis, Peru & Chicago Company, after 25 years of continuous service as an officer of the company.

—The Aurora (Ill.) *Beacon* says: "For several months past, there have been rumors in the air that there were to be changes in the administration of the railroad shops in this city, and those who have noticed things, some time since arrived at the conclusion that Mr. H. B. Stone was the coming man. He came here some time since, took a lowly position in the shops, passed up through the various grades to his present position of Master Mechanic at Aurora. The fact of his fine mechanical education and high eastern connections, also added to the idea that, when the time came, Mr. Stone's fine theoretical and practical training would be used for the benefit of the Company. It is now stated that on the first of January next Mr. Challenger's connection with the company will cease; that at that time Mr. Stone will take charge. It is further stated that the Locomotive and Car departments will be separated at that time, and Mr. Robert Miller, now Master Car-Builder of the Michigan Central Railroad, will take charge of the Car Department here. These proposed changes are at present but statements and rumors, but time will soon determine whether or not they are correct."

—Mr. David Leavitt, for many years a successful merchant and bank president of New York, died in that city Dec. 30, in the 88th year of his age. He was for many years a director and for a time President of the Housatonic Railroad Company, giving up his seat at the board to his son a few years ago.

—Mr. Francis Burns, for 25 years a director of the Baltimore & Ohio Company, died at his residence in Baltimore, Dec. 28, in the 88th year of his age. Mr. Burns was of Scotch-Irish descent, and was born in County Antrim, Ireland, April 11, 1792. He came to this country with his parents, who settled in Philadelphia in 1798. The deceased came to Baltimore in 1818, and established himself in the brick-making business with the late George Whitman. This partnership lasted several years and its termination, upon the retirement of Mr. Whitman, Mr. Burns conducted the business by himself for some time, until forming a partnership with the late Abraham Russell, with whom he conducted a very successful business until 1860, when he retired. During his life he was connected with a number of corporations and institutions, and was also a prominent member of the Masonic fraternity, being one of the oldest members of that order in Maryland. He leaves a considerable estate.

—Mr. H. C. Francis, who has for eleven years past held a confidential position with Messrs. Wm. Sellers & Sons in Philadelphia, on Jan. 1 goes to the Rogers Locomotive Works in Paterson, N. J., as Assistant to Mr. William S. Hudson in the management of the works. Mr. Francis received his early training in the Baldwin Locomotive Works, and while there and with Messrs. Sellers has made very many friends, who will doubtless be glad to hear of his new position.

—A Tennessee paper starts a sort of railroad presidential boom by nominating Wm. H. Vanderbilt for President and "Uncle Dick" Bishop, of Ohio and the Cincinnati Southern, as Vice-President of the United States.

—Hon. Wm. J. McAlpine (Past President of the American Society of Civil Engineers, and an engineer of high reputation) and Mr. M. Van Brocklin, late Superintendent of the Metropolitan Elevated Railroad, sailed from New York Dec. 27 on the steamer City of Alexandria, Mr. McAlpine going out as Consulting Engineer and Mr. Van Brocklin as Chief Engineer of the Tehuantepec Railroad. They took with them a large corps of assistants for the survey of the railroad to connect the Atlantic and Pacific oceans across the Isthmus of Tehuantepec. Mr. McAlpine expects to return in February next, but Mr. Van Brocklin will remain in charge of the work.

—Sir Alexander T. Galt, who has just been appointed Resident Minister or Commissioner to represent the Dominion of Canada in England, has large interests in railroad property, and is a director in the Ohio & Mississippi Company.

#### TRAFFIC AND EARNINGS.

##### Grain Movement.

For the week ending Dec. 20 receipts and shipments of grain of all kinds at the eight reporting Northwestern mar-



kets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1873.....	2,872,104	1,866,067	1,866,067
1874.....	1,872,171	502,345	1,338,429
1875.....	2,231,724	788,772	1,395,791
1876.....	2,711,045	1,108,217	1,841,227
1877.....	2,319,829	1,377,804	3,228,010
1878.....	2,972,744	1,599,045	3,143,021
1879.....	3,040,974	1,301,537	3,473,430

The receipts at Northwestern markets for the week are a trifle greater than for the previous week, and much greater than in the corresponding week of any previous year. The shipments of these markets were nearly one-half greater than in the previous week, but smaller than in the corresponding weeks of 1878 and 1877. The receipts of Atlantic ports were nearly 30 per cent. more than in the preceding week, and larger than in the corresponding week of any previous year.

Of the receipts at Northwestern markets 38.4 per cent. was at Chicago, 26.8 at St. Louis, 15.2 at Milwaukee, 8.8 at Peoria, 6.4 at Toledo, 3.4 at Detroit, and 1 per cent. at Cleveland.

Of the receipts at Atlantic ports 28.1 per cent. was at Baltimore, 24.1 at New York, 20.7 at New Orleans, 13 at Philadelphia, 8.3 at Boston, 5.4 at Portland, and 0.4 per cent. at Montreal. The quantity received at New York has not been so small before since the snow blockade in January last; Baltimore's receipts, on the other hand, are the largest for six weeks, and New Orleans receipts the largest ever known. It is usual for New York's receipts to fall off greatly after the close of navigation for a few weeks, but the falling off is unusually great this year.

#### Railroad Earnings.

Earnings for various periods are reported as follows:

Eleven months ending Nov. 30:	1879.	1878.	Inc. or Dec.	P. c.
Houston & Texas				
Central.....	\$2,823,451	\$2,540,418	I. \$283,033	11.1
Net earnings.....	1,216,094	950,722	I. 255,972	27.2
Pennsylvania.....	31,168,353	29,031,438	I. 2,134,915	7.4
Net earnings.....	12,725,485	12,235,806	I. 489,679	4.0
Ten months ending Oct. 31:				
Chicago & Eastern				
Illinois.....	\$721,981	\$608,307	I. \$113,674	8.0
N. Y. Lake Erie & Western.....	13,594,042	12,547,088	I. 1,046,954	8.3
Net earnings.....	4,030,752	3,954,433	I. 76,319	2.2
Month of October:				
Little Rock & Ft. Smith.....	\$54,104	\$32,086	I. \$22,018	68.8
Net earnings.....	36,215	17,056	I. 19,159	112.7
N. Y. Lake Erie & Western.....	1,713,698	1,473,532	I. 240,166	16.3
Net earnings.....	715,723	619,487	I. 96,236	15.5
Month of November:				
Boston & N. Y. Air Line.....	\$22,230			
Net earnings.....	13,722			
Houston & Texas				
Central.....	429,803	\$408,133	I. \$21,670	5.3
Net earnings.....	271,482	200,990	I. 70,492	35.1
Little Rock & Ft. Smith.....	63,300	41,088	I. 22,212	54.0
Net earnings.....	44,300	24,055	I. 20,245	84.4
Louisville & Nashville.....	689,434	591,370	I. 98,064	16.6
Net earnings.....	351,600	298,442	I. 53,158	17.8
Pennsylvania.....	3,131,997	2,996,101	I. 135,896	4.5
Net earnings.....	1,346,449	1,390,250	D. 43,801	3.2
Second Week in December:				
Chicago & Alton.....	\$137,109	\$76,634	I. \$60,475	78.9
Min. & St. Louis.....	8,093	6,392	I. 1,701	35.0
Third Week in December:				
Chicago & Eastern				
Illinois.....	\$20,884	\$16,760	I. \$4,124	24.5
Chicago, Milwaukee & St. Paul.....	227,000	180,297	I. 46,703	25.9
Mobile & Ohio.....	76,229	66,110	I. 10,119	15.3
St. Louis, Iron Mt. & Southern.....	186,800	119,019	I. 67,781	57.0
St. Louis & San Francisco.....	54,600	27,000	I. 27,600	102.2
Week ending Dec. 19:				
Great Western.....	\$102,373	\$79,891	I. \$22,482	28.1
Week ending Dec. 20:				
Grand Trunk.....	\$200,188	\$170,108	I. \$30,080	17.7

\* Actual corrected earnings.

#### Coal Movement.

Coal tonnages are reported as follows for the week ending Dec. 20:

	1879.	1878.	Inc. or Dec.	P. c.
Anthracite.....	502,255	395,939	I. 106,316	37.3
Semi-bituminous.....	99,271	45,013	I. 54,258	120.6
Bituminous, Penna.....	58,045	38,009	I. 20,036	52.7
Coke, Penna.....	38,077			

The estimated production of coal from the Cape Breton (Nova Scotia) mines for 1879 is 191,000 tons, against 234,000 tons in 1878, a decrease of 43,000 tons, or 18.4 per cent.

#### OLD AND NEW ROADS.

**Atchison, Topeka & Santa Fe.**—The Boston *Advertiser* of Dec. 26 says: "Tuesday morning a Chicago paper published a statement, asserted to be upon reliable information, that the Jay Gould railroad syndicate had not only secured the control of the Texas & Pacific railroad to extend it forthwith to El Paso, there to connect with the Southern Pacific Railroad, but that the managers of the Atchison, Topeka & Santa Fe Railroad are having a conference in New York just now with Jay Gould and his syndicate, and that their object is to make an arrangement by which the syndicate is to have virtual control of the lines of this company. With the Atchison, Topeka & Santa Fe Railroad in its possession, Gould's syndicate will have obtained the ends it has been striving for, and will find no further obstacles in its way to final success. The paper states that litigation between the Atchison, Topeka & Santa Fe and the Texas & Pacific railroads, regarding terminal facilities at San Diego, has closed, an amicable arrangement between these two lines having been perfected, by which the Texas & Pacific will deed one-half of its railroad land to the Atchison, Topeka & Santa Fe. This will give the latter company deep-water frontage on the bay and 5,000 acres of well-located land, with ample facilities and privileges for first-class depot and wharf accommodations. It is also said that arrangements have been made between the Atchison, Topeka & Santa Fe, the Kansas Pacific interest and the Denver & Rio Grande Railroad, by which the last-named is to distribute its patronage between the two former roads. It is also understood that a new pooling arrangement has lately been made between the Union Pacific, Kansas Pacific and the Atchison, Topeka & Santa Fe railroads. Then it is further announced that a new company has been formed to operate a new line from Pueblo to Leadville, beyond and through Grand Cañon. It is claimed this company is to assume the rights of both the Atchison, Topeka & Santa Fe and the Denver & Rio Grande railroads in the Grand Cañon, thus

stopping all further litigation regarding this matter. The Atchison, Topeka & Santa Fe people, it is said, found that to fight the Gould combination would entail heavy losses upon them. They think they can make more money out of their road by letting Gould manage it instead of managing it themselves.

"President Nickerson, of the Atchison, Topeka & Santa Fe road denies the accuracy of the above statement. He says: 'Mr. Gould has made no arrangement with us for the control of our lines, nor is he likely to. He couldn't if he wanted to; but he don't want to. Mr. Gould tells me that he took hold of the Texas Pacific to help Mr. Scott. He will build westward, but what he will do in the territories, whether he will connect with us on the 85th parallel route or with the Southern Pacific, is in the future. We have an understanding with him in reference to future business, but what it will amount to we cannot tell now.' The earnings and expenses of the Atchison, Topeka & Santa Fe road for October have just been made up at the company's office in this city. The earnings were, in round numbers, \$764,000, and the expenses \$250,000. The remarkable thing is that the operating expenses were brought down during this month to 33 per cent. of the earnings. Any compromise of the Grand Cañon case is denied. The company recently organized to build a road from Pueblo to Leadville is supposed to be in the Denver & Rio Grande interest; the Atchison people had nothing to do with it. On account of the illness of Judge Hallett the Grand Cañon case is to be re-heard before Judge McCrary.

"Further information regarding the San Diego land grant to the Atchison, Topeka & Santa Fe road is to the effect that the company gets from the Texas Pacific one mile of water frontage and a square mile of territory for terminal facilities, and also 15,000 acres donated by private owners. Wilbur and Pratt, of the Atchison road, have agreed to locate passenger and freight depots on this land. A dispatch from San Diego says immediately upon the news becoming known, the price of real estate advanced rapidly, and many thousands of dollars' worth changed hands. There are but two ports upon the California coast outside of San Francisco, and these are Los Angeles and San Diego."

**Atlantic, Mississippi & Ohio.**—The receivers give notice that the half-yearly interest on the divisional bonds, Virginia & Tennessee certificates and preferred stock falling due Jan. 1 will be paid promptly. They also give notice that, in pursuance of an order of the Court, interest on what are known as the Decatur H. Miller trust bonds will be paid at the rate of 6 per cent. per year, instead of 8 per cent., as heretofore.

**Boston, Barre & Gardner.**—The Boston *Traveler* says: "Appearances indicate that this long-suffering and much-harassed corporation is about to emerge from its troubles into a brighter day. It would appear that a syndicate of Worcester County capitalists have taken up the road with a view to placing its affairs on a better basis than that on which they have hitherto rested. At the recent forced sale of the property of the road, Stephen Salisbury, Jr., was present as the representative of a syndicate determined to extricate the road from its present difficulty. The sheriff, who acted at the sale, would not deliver the property until furnished with a bond of indemnification, which, when furnished, bore such names as Stephen Salisbury, Stephen Salisbury, Jr., Geo. S. Barton, Levi Heywood, of Gardner, and W. W. Rice. The amount of the sale was over \$12,000, and a bond of such sale, with the names given above, ought to and will pass muster wherever it may be presented. Of the bondholders, those representing about \$25,000 of the \$400,000 have accepted the reduced rate of interest."

**Boston, Clinton, Fitchburg & New Bedford.**—At a special meeting held Dec. 29 the stockholders voted to authorize the issue of \$3,500,000 bonds to be secured by a mortgage on the road. The bonds are to have 30 years to run, at 6 per cent. interest, and to bear the written agreement of the Old Colony Company, lessee of the road, to pay over to the trustees so much of the rent of the road as may be necessary to pay interest on the bonds. The directors were instructed to procure an act from the Legislature authorizing the execution of the mortgage. The object of the issue is to fund and consolidate the existing debts of the company.

**Boston & Lowell.**—Trains on this company's Lawrence Branch began to run to the new depot on Amesbury and Canal streets in Lawrence, Mass., Dec. 29. The extension of the road from the old depot on the south side of the Merrimac to the new station is only a little over half a mile long, but its construction has taken much time and expense. It was necessary, in the first place, to secure authority from the Legislature to cross the Boston & Maine track at grade. Then a bridge over the Merrimac had to be built and right of way secured through the property of several mills. It gives the branch a good station in Lawrence, and better facilities for business.

**Canada Southern.**—The high wooden bridge over Kettle Creek, near St. Thomas, Ont., is to be replaced by an iron viaduct.

**Central Pacific.**—This company is building at Ogden, Utah, a new round-house; a car shop, 60 by 100 ft.; a lumber-shed, 32 by 140 ft.; a blacksmith shop, 30 by 40 ft., all of wood, besides a new water-tank, a turn-table, a coal-platform, 20 by 200 ft., and a brick oil-house. The round-house is so built that it can readily be enlarged when needed. The company is also putting down nearly three miles of new sidings in the Ogden yard.

**Chesapeake & Ohio.**—Notice is given to holders of the 8 per cent. bonds that the company will, on and after Jan. 1, 1880, in the city of Richmond, pay off all of their 8 per cent. bonds, including the old bonds of the Virginia Central Railroad. This notice is intended to cover alike outstanding 8 per cent. bonds given by the Virginia Central Railroad Company and those issued by the Chesapeake & Ohio Railway Company in lieu of 8 per cent. bonds surrendered. If desired by any of the holders of these bonds, the company will give them the option of taking 6 per cent. purchase-money bonds in exchange for their bonds at par.

At the annual meeting in Richmond, Va., Dec. 30, the earnings for the year ending Sept. 30 were stated as follows:

	1878-79.	1877-78.	Inc. or Dec.	P. c.
Earnings.....	\$1,891,542	\$1,936,391	D. \$44,810	2.3
Expenses.....	1,507,332	1,594,739	D. 87,407	5.5
Net earnings.....	\$384,210	\$341,622	I. \$42,588	12.5

The report says that the business of the road promises to increase largely in the future, and that there is a prospect of the early completion of a Western rail connection, and also of an extension from Richmond to deep water on Chesapeake Bay. The net earnings last year were about 1½ per cent. on the funded debt.

**Chicago & Alton.**—The passenger business on this company's Kansas City Line has increased so much that it has been necessary to divide the trains. The Chicago and St. Louis trains, heretofore run as one train between Roodhouse and Kansas City, are now run separately as two distinct trains.

**Chicago, Burlington & Quincy.**—Track is reported laid on the Albia, Knoxville & Des Moines Branch to Des Moines, completing the line, which will be opened for business early in January. The length of the branch from the main line at Albia to Des Moines is 69 miles, and it was finished last year to Knoxville, 33 miles.

**Chicago, Milwaukee & St. Paul.**—On the Iowa & Dakota Division extension track is reported laid to Niobrara, Dak., 71 miles west by south from Marion Junction and 401 miles from the Mississippi at McGregor. Trains are not running regularly as yet.

The branch from Rock Valley, Dak., to Yankton, is nearly all graded, but no rails have been laid, and probably none will be before spring.

**Chicago & Pacific.**—In Chicago, Dec. 22, the United States Circuit Court allowed a number of small intervening claims for labor and supplies, and dismissed some others. The Court then ordered that the purchasers of the road (John I. Blair and others) pay into court, by Jan. 20, \$300,000 to meet the claims already allowed and some others which are still in litigation, as well as other sums necessary to be paid. A reference to the Master was ordered, to compute all claims allowed as having priority to the mortgage, and report what balance of the purchase money may be applicable on the mortgage debt.

**Columbus & Rome.**—This company bought the old North & South road from the state of Georgia in October, 1879. The road was of 3 ft. gauge and was then open from Columbus, Ga., to Kingsboro, 30 miles. The company has made, during this year, extensive repairs on road-bed and rolling stock, rebuilt one engine and purchased another (a 16½-ton Hinkley engine), completed the road to Hamilton, four miles beyond Kingsboro, and nearly completed it over Pine Mountain to Belmont, eight miles from Hamilton, and 32 miles from Columbus. Grading is nearly all done to La Grange, 18 miles further, and from Rome, Ga., south to Cedartown, 20 miles.

**Dallas, Cleburne & Rio Grande.**—The engineers have completed the location of this road from Dallas, Tex., to Cleburne. The distance is 49 miles. The company hopes to be able to let contracts for grading in January.

**Dayton & Southeastern.**—Receiver Gimperling makes the following statement for the 14 months and 22 days from Aug. 9, 1878, to Nov. 1, 1879:

Gross earnings (\$1,571 per mile).....	\$125,705.81
Expenses.....	84,292.64
Balance, net earnings (\$518 per mile).....	\$41,443.17
Liabilities, Nov. 1.....	4,464.99

Total.....\$45,908.16

Liabilities of company paid.....\$13,901.43

Interest on first-mortgage bonds.....11,133.50

Betterments and new equipment.....21,098.55

Total.....\$46,133.48

Less received from company's assets.....2,962.22

Balance.....\$2,736.90

The balance is represented by \$2,566.89 due from other roads, agents, etc., and \$170.01 in cash on hand.

**Denver & Rio Grande.**—It is stated that this company has bought the toll road from Animas, Col., to Silverton in the San Juan Region. This road is graded, and on a large part of it the rails can be laid with very little additional work.

**Ft. Madison & Northwestern.**—This company expects to extend its road westward this year for 80 or 100 miles from the present terminus at West Point, Ia. The engineers have begun the survey of the road, and it is to be located this winter, so that grading can be begun early in the spring. There are now 11.2 miles in operation; from Ft. Madison, Iowa, westward to West Point.

**Georgia.**—It is reported that negotiations are in progress for a lease of this road to the Nashville, Chattanooga & St. Louis Company, the lessee to assume all obligations and guarantee regular dividends on the stock. This would give the Nashville & Chattanooga a line to Augusta, whence the sea-board can be reached either by the Port Royal & Augusta or the South Carolina road, either of which could probably be secured for a moderate sum. The Georgia stockholders have been getting 6 per cent. for the last year or two, before which the dividends were irregular for several years.

**Herkimer & Poland.**—It is proposed to build a narrow-gauge railroad from Herkimer, N. Y., on the New York Central, northward 16 miles to Poland. A considerable amount has been subscribed along the line.

**Houston, East & West Texas.**—Work is reported in progress on the extension of this road from Livingston, Tex., to Moscow, 20 miles. The road is doing a considerable business, chiefly in lumber, and the company has found it necessary to buy a new locomotive and 50 flat cars for this trade.

**Indianapolis, Decatur & Springfield.**—At latest accounts the track of this road had reached a point 40 miles east of the late terminus at Guilin, Ind., and 141 from Decatur, Ill., leaving only 11 miles of track to be laid to reach Indianapolis. The tracklayers were at work on both ends of the gap, but slowly, as the El River bridge is not completed.

**James River & Kanawha Canal.**—It is proposed to consolidate this company with the Buchanan & Clifton Forge Railroad Company, and also to try and effect a settlement of the debts of the two companies. The indebtedness of the canal is about \$1,900,000, while that of the railroad company is quite small, being only about \$80,000. The plan is to compromise the canal debt at 60 per cent. of principal and interest of the first mortgage, and at 20 per cent. of principal and interest of the second mortgage, while it is proposed to pay 70 per cent. of principal and interest of the railroad mortgage. It is also proposed to make a separate mortgage on the valuable dock property of the canal in Richmond, to raise the money required.

**Kansas Pacific.**—The Salina & Southwestern Branch is now completed to McPherson Centre, Kan., 25 miles southward from the former terminus at Lindsborg, and 45 miles from the junction with the main line at Salina. It passes through a country which is fast filling up with settlers. At McPherson Centre it meets a branch of the Atchison, Topeka & Santa Fe.

**Keokuk & Des Moines.**—A statement published by this company for the year ending Sept. 30 last is as follows: Gross earnings, \$565,556.11; 25 per cent. of which is \$141,389.03; interest paid on bonds, \$137,500; surplus for the year \$3,889.03. This road is leased to the Chicago, Rock Island & Pacific Company at an annual rent of 25 per cent. of the gross receipts, the lessee guaranteeing that the rent shall be equal to the annual interest on its bonded indebtedness (\$2,750,000 at 5 per cent.). The last year's rental shows an excess over interest paid of \$3,889.03, giving



about 25 cents per share to the preferred stock, which is entitled to 8 per cent. dividends before the common stock participates. As this sum is too small to divide, the managers have concluded to allow it to remain on interest, hoping that future accumulations will enable them to make a division at some future time.

**Lake Erie & Western.**—The following circular is issued, announcing officially the consolidation of this company and the LaFayette, Bloomington & Muncie:

"The above-named railway companies, having been consolidated under the corporate name of the Lake Erie & Western Railway Company, to date on and after Jan. 1, 1880, connecting lines are requested to adjust all claims and balances accruing prior to that date with the respective general offices at Fremont, O., and LaFayette, Ind., as heretofore.

"All accounts dating on and after Jan. 1, 1880, will be in the name of the Lake Erie & Western Railway Company, and be adjusted with the general offices at LaFayette, Ind."

**Lexington & Black River.**—This company has been organized to build a railroad from Lexington, Sanilac County, Mich., westward about six miles to connect with the Port Huron & Northwestern road at Crosswell.

**Little Rock, Mississippi River & Texas.**—The City Council of Little Rock, Ark., has granted this company depot grounds in that city and also right of way through several streets. Surveys are now being completed for the extension from Pine Bluff to Little Rock.

**Louisville, New Albany & St. Louis.**—This company's engineers have begun surveys for the location of a bridge over the Ohio between Louisville and New Albany, Ind. The bridge is to have a highway and a horse-car track besides the railroad tracks.

**Mobile & Alabama Grand Trunk.**—At a meeting held in Mobile recently, a committee was appointed to raise subscriptions for this company, and to secure the assent of the old bondholders to the proposed reorganization.

**Midland, of Canada.**—It is reported that negotiations are in progress for a lease of this road to the Grand Trunk Company. The rumor further runs that the ultimate object of the Grand Trunk is to extend the road from its present terminus at Coldwater, Ont., by way of Parry Sound to French River, and thence to the Sault Ste. Marie, with a view to a connection with the Canadian Pacific, and possibly a line from the Sault to St. Paul.

**Milwaukee, Lake Shore & Western.**—The branch line from Hortonville, Wis., to Oshkosh, 20 miles, is all graded, and tracklaying has been begun. If the weather is favorable, it will probably be finished some time this month.

**Milwaukee & Dubuque.**—An effort has been made to revive this project, and a conference was recently held in Milwaukee at which were present a number of delegates from towns along the line and President Mitchell, of the Chicago, Milwaukee & St. Paul. Mr. Mitchell promised to bring the matter before his board of directors, and see what could be done to aid the project. The proposed line is from Monroe, Wis., the terminus of a branch of the Chicago, Milwaukee & St. Paul, by way of Gratiot and Shullsburg to Dunleith, Ill., opposite Dubuque.

**Nashville, Chattanooga & St. Louis.**—Parties interested in the Poplar Mountain coal mines in Kentucky, are negotiating for an extension of this company's Tennessee & Pacific Branch. They offer, if the company will build from the present terminus of the branch at Lebanon, Tenn., northeast to the Kentucky line, about 55 miles, that they will extend it from that point to their mines, and to a connection with the Cincinnati Southern, some 45 miles further.

**New York Central & Hudson River.**—This company has refused to accept the modifications made by the Rochester City Council in the plans for elevating the tracks through the city. It is said that the company will build a new line, passing around the city on the south, over which all through trains will be run, continuing the use of the present tracks for necessary local trains.

**Ohio & Mississippi.**—Receiver King's November statement is as follows:

Cash, Nov. 1	\$227,421
Receipts from all sources	526,340
Total	\$753,761
Vouchers, pay-rolls, etc.	414,143

Balance on hand, Dec. 1.....\$339,618

The receipts were greater by \$112,197 than the disbursements.

**Oregon Railway & Navigation Co.**—It is stated that this company intends to build a railroad from Astoria, the western terminus of the Pend d'Oreille Division of the Northern Pacific, now under construction, westward along the south bank of the Columbia River to Celilo, a distance of about 200 miles. Celilo is the foot of navigation on the Upper Columbia, and a railroad is already in operation thence to Dalles, which is used for transferring business around the rapids of the Columbia. Below Dalles navigation is easy and open to large boats, but above Celilo it is sometimes dangerous, and the business already exceeds the capacity of the boats which can be used. The railroad is considered a necessity and will, it is believed, be able to pay full interest on its cost, which is estimated at \$2,000,000. It is said that the Oregon Company has fully decided to build the road alone, if necessary, but negotiations are pending with the Northern Pacific for an arrangement by which it will be built and worked jointly by the two companies.

**Owensboro & Nashville.**—Proposals will be received at the office of E. F. Falconnet, Chief Engineer, in Nashville, Tenn., until Jan. 9, for:

1. Grading, masonry, trestles, ballast, and ties of sections 1 to 14, inclusive, of the Tennessee Division, from Adairville, Ky., to Springfield, Tenn.
2. Masonry of the bridge over Cumberland River, near Nashville.

3. Delivery of ties from Section 15, Tennessee Division, to Nashville.

Plans, profiles and specifications can be seen and blank forms obtained at the office in Nashville.

An organization of this company in Tennessee is completed, for the purpose of building the road from Nashville to the Kentucky line. The incorporators are the directors of the Kentucky company.

**Peninsular, of Florida.**—This road is now completed from Waldo, Fla., on the Atlantic Gulf & West India Transit road southward 20 miles to Lufloosa. The road was lately opened for business, and trains are now running in connection with a steamboat on Orange Lake. The road is bringing out from six to ten car-loads of oranges on each train.

Arrangements are about completed for extending the road from Lufloosa to Ocala, 23 miles, during the coming year.

**Pennsylvania.**—This company's statement for November shows that the earnings for that month, as compared with

November, 1878, on all lines east of Pittsburgh and Erie, show:

An increase in gross earnings of.....	\$135,896
An increase in expenses of.....	179,097

Net decrease.....\$43,801

For the eleven months ending Nov. 30, as compared with the same period in 1878, the same lines show:

An increase in gross earnings of.....	\$2,134,916
An increase in expenses of.....	1,645,237

Net increase.....\$489,679

All the lines west of Pittsburgh and Erie for the eleven months of 1879, show a surplus over liabilities of \$1,368,215, being a gain over the same period in 1878 of \$847,307.

The company has made an arrangement with Drexel & Co. for the sale of \$5,000,000 of consolidated mortgage bonds for the purpose of paying off the first-mortgage bonds falling due Dec. 31, 1880. The new bonds are secured by the consolidated general mortgage, have 45 years to run and bear 5 per cent. interest. No sales of the new issue will be made until Feb. 10, 1880, but up to that time they will be exchanged for bonds of the old issue at 98½ and accrued interest, the old bonds to be taken at par and accrued interest. Upon the retirement of the first-mortgage bonds, the consolidated mortgage will be a first lien on most of the company's property.

A suit was recently brought by Robert Arthur, a stockholder, to restrain the company from building the new elevated road to the site of the new passenger station at Broad and Filbert streets in Philadelphia. The grounds for the application were that the building of the road would subject the company to an enormous expense, and would be a serious damage to the stockholders. The Court refused the injunction without hearing argument, this course being taken in order that counsel might enter an appeal and take the case to the Supreme Court as quickly as possible.

A report is current, it is said on "semi-official" authority, that in the spring, probably soon after the annual meeting in March, the company will make a general increase in the wages of its employees.

The Philadelphia *North American* of Dec. 30 says: "At last the representatives of the Pennsylvania Railroad Company and some of the leading officials and citizens of the County of Allegheny have come together with a view to agreeing upon some plan for compromising the losses sustained by the company in the riot of July, 1877. These were estimated in the annual report of the company at five millions, but that estimate has since been revised by throwing off a million dollars claimed as consequential damages and reducing the sum claimed by shippers and consignees by \$300,000. Of this total, it is estimated that the railroad company lost \$2,300,000, shippers and consignees \$800,000, and private individuals \$600,000 more. Since then a commission of Allegheny County experts have appraised the loss of the company at \$2,332,000, and the company has made an offer of settlement at \$1,600,000 cash, or about 66 per cent., without interest. There is a strong feeling in the county toward settling the matter without further litigation, and a public meeting will be held soon to discuss the matter. It is entirely within the power of the county authorities to pay the claim, and it is probable they would take steps to that effect if advised that in so doing they would be carrying out the wishes of taxpayers."

**Santa Fe Canal.**—This Florida Canal is now completed from the starting point at Waldo, on the Atlantic Gulf & West India Transit road to within a mile of Lake Santa Fe, a distance of about five miles. It is believed that it can be completed to the lake inside of eight months. The company is preparing to build several steamboats to run upon the canal and the lakes with which it connects.

**St. Louis, Iron Mountain & Southern.**—St. Louis dispatches state this company is considering plans for the extension of its track to the Union Depot in St. Louis by an elevated road.

The project for a bridge over the Mississippi at Carondelet, about six miles below the present St. Louis Bridge, has been revived. This company and the Missouri Pacific now transfer a large number of cars across the river by ferry at that point, chiefly of coal and ore, and the business is increasing very fast since the revival of the iron trade began.

**St. Louis & Southeastern.**—It is stated that this road is to pass under the control of the Nashville, Chattanooga & St. Louis from Jan. 1, under the arrangement made with the bondholders.

**St. Paul Eastern Trunk.**—It is reported that arrangements have been made by which the Milwaukee, Lake Shore & Western will build 85 miles of this road, from the present terminus of its own line to Colby on the Wisconsin Central, while persons interested in the Wisconsin Central will build the 55 miles from Colby to Chippewa Falls, whence there is already a line over the Chippewa Falls & Western, and the Chicago, St. Paul & Minneapolis roads to St. Paul. This will complete the projected line from St. Paul to Manitowoc and Milwaukee, but will not give it an independent entrance into St. Paul.

**Sedalia, Warsaw & Southern.**—This road is now graded from Sedalia, Mo., southward to Warsaw, 40 miles, and tracklaying will be begun shortly. The company hopes to have trains running to Warsaw by March.

**Selma & Greensboro.**—Track has been laid on the extension of this road from Marion Junction, Ala., southeast about eight miles to a connection with the New Orleans & Selma road near Saltmarsh. The trains of the road will hereafter enter Selma on the New Orleans & Selma road instead of by the Alabama Central, as heretofore. This extension makes the road 43 miles long, from Greensboro to the New Orleans & Selma junction.

**Southern Minnesota.**—The following circular is dated Dec. 1:

"This company having acquired the railroad and property of the Central Railroad of Minnesota, that line will hereafter be known and operated as the Mankato Division of the Southern Minnesota Railway."

"Other roads are requested to make separate ticket and mileage reports, as heretofore, until Jan. 1, 1880, after which date but one report will be required for account of the Southern Minnesota Railway."

The Central Railroad is 40 miles long, from Wells, Minn., on the Southern road, to Mankato. It had a funded debt of \$580,000, and its earnings reported for 1878 were \$1,239 gross, and \$577 net, per mile.

This company pays in January on its construction bonds, in addition to the semi-annual coupon of \$35, an extra sum of \$7.35 on account of the past-due coupons.

**South Carolina.**—The Reorganization Committee has prepared a plan for settling the affairs of this company, which is said to have received the approval of one-half the second-mortgage bondholders and nearly all the floating debt creditors. The main object of the plan is a settlement without foreclosure, in order that the company may retain the privileges which it now holds under its old charter. The chief points of the committee's plan are as follows:

The April, 1880, and all preceding coupons on the second-

mortgage bonds, the accrued interest to April 1, 1880, on all floating debt, the principal of all unsecured floating debt and the principal and interest to April, 1880, of the non-mortgage bonds, are all to be funded into third-mortgage non-cumulative 7 per cent. income bonds.

The interest on the second mortgage bonds is to be reduced to 3 per cent. for the year beginning April, 1880, 4 per cent. for 1881, 5 per cent. for 1882, 6 per cent. for 1883, and thereafter 7 per cent.; but if the railroad earns enough to pay more than this on the second mortgage bonds, it shall pay it up to 7 per cent.

The principal of the secured floating debt is to be first reduced by the sale of all the hypothecated first-mortgage bonds at par and interest, to the holders thereof, and the remainder is to be canceled by the sale to the holders of said debt of a sufficient number of second-mortgage bonds (interest reduced as above) at 80 per cent. of their par value. The second-mortgage bonds remaining to be canceled.

An adjudication to be obtained declaring all second-mortgage bonds valid. The stock to remain in the hands of trustees until 7 per cent. shall have been paid on the income bonds, its voting power subject to instructions from second-mortgage bondholders.

**Steubenville & Cleveland.**—This company has been organized to build a narrow-gauge railroad from Steubenville, O., Northwest to Carrollton, to connect with the Youngstown & Connotton Valley road. The distance is about 35 miles.

**Tuckerton.**—The Court of Chancery of New Jersey has granted a decree of sale against this road, and it will probably be sold next month. It extends from Whiting Junction, N. J., on the New Jersey Southern, to Tuckerton and Edge Cove, 31 miles. The company has a bonded debt of \$408,000 and a considerable floating debt. The earnings are very light, barely covering the expenses.

**Western Nevada.**—This company has filed articles of incorporation to build a narrow-gauge road from Wadsworth, Nev., on the Central Pacific, south by east to Walker Lake, a distance of 55 miles. The capital stock is fixed at \$500,000; the incorporators are chiefly San Francisco owners of mining property.

**Western North Carolina.**—Raleigh dispatches report that the Governor of North Carolina will call a special session of the Legislature to act upon an offer received for the purchase of this road from the state. It is said that the proposal is to pay the state \$900,000 for the road as it stands, the purchasers giving security that they will complete the line to Asheville and the Tennessee line at Paint Rock this year, and the branch to Ducktown, in the extreme southeastern corner of the state, by 1882.

## ANNUAL REPORTS.

### Rome, Watertown & Ogdensburg.

This company owns a line from Rome, N. Y., to Ogdensburg, 141.11 miles, with branches to Cape Vincent, 24.24 miles; to Potsdam, 24.28 miles; to Syracuse, 44.50 miles, and from Oswego, N. Y., to Lewiston, 146.17 miles. It leases the Oswego & Rome road, from Richland to Oswego, 28.58 miles, making 380.30 miles owned and 408.88 worked. The following statements are from the report to the New York State Engineer for the year ending Sept. 30:

	1876-77.	1877-78.	1878-79.
Capital paid in.....	\$5,293,900	\$3,147,000	\$3,147,000
Funded debt.....	7,749,900	7,749,900	7,749,900
Floating debt.....	597,778	608,688	634,585
Gross receipts:			
From passengers.....	\$352,601	\$443,388	\$480,102
From freight.....	647,357	656,046	682,827
Other sources.....	113,300	103,829	92,342
Total.....	\$1,113,258	\$1,203,263	\$1,255,271
Transportation expenses.....	834,640	863,636	912,134
Net earnings.....	278,618	\$340,224	\$343,137
Interest paid.....	250,548	417,205	554,701
Rental Oswego & Rome road.....	24,000	24,000	24,000

The latest project in connection with the road is the construction of a bridge across the Niagara River at Lewiston, with the object of forming a new east and west line to New England, in conjunction with the Great Western of Canada.

### New York & Oswego Midland.

This road extends from Oswego to Middletown, N. Y., 249 miles, and has 95 miles of branches. The company has been financially embarrassed almost ever since the completion of the road, and, as our readers know, the property was recently sold in foreclosure sale, after having been in the hands of receivers for over six years. The road is still operated by the receivers and will probably remain in their possession for a month or two longer, until all the legal formalities in the case have been gone through with. The statement of indebtedness given below shows the condition of the company before the sale. The figures are from the reports to the New York State Engineer for the year ending Sept. 30:

	1876-77.	1877-78.	1878-79.
Capital stock paid in.....	\$6,800,522	\$6,800,522	\$6,800,522
Funded debt.....	16,073,500	16,073,500	16,073,500
Floating debt.....	6,524,235	6,513,018	6,513,553
Gross receipts:			
From passengers.....	\$119,560	\$132,299	\$133,908
From freight.....	353,530	371,850	371,990
Other sources.....	50,502	55,871	62,305
Total.....	\$523,592	\$560,020	\$568,203
Transportation expenses.....	487,778	506,358	528,872
Net earnings.....	\$35,814	\$53,662	\$39,331
Interest paid.....	1,412	2,292	1,291

The new company will have but a small debt, not over \$200,000, and perhaps no debt at all. There will be \$2,000,000 of preferred stock, and an amount of common stock that will depend upon the number of the old company's creditors that enter into the new arrangement.

### Philadelphia, Wilmington & Baltimore.

This company owns a line, all double track, from Philadelphia to Baltimore, 96.32 miles; a freight branch, 0.47 miles long, in Philadelphia; the Port Deposit Branch, from Ferryville, Md., to Port Deposit, 3.76 miles, and the Southern Division from Delaware Junction to Rodney, Del., 11.40 miles, making 111.95 miles owned. It leases the Delaware Railroad and branches, 100.50 miles, but the earnings are



